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**COTTONSEED FLOUR, PEANUT FLOUR,
AND SOY FLOUR:**

**FORMULAS AND PROCEDURES FOR FAMILY
AND INSTITUTIONAL USE IN
DEVELOPING COUNTRIES**

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COTTONSEED FLOUR, PEANUT FLOUR, AND SOY FLOUR: FORMULAS AND PROCEDURES FOR FAMILY AND INSTITUTIONAL USE IN DEVELOPING COUNTRIES

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SUMMARY

Basic formulas, food combinations, and preparation procedures suitable for use by families and community groups were developed for flours made from cottonseed, peanuts, and soybeans.

The maximum amount of plant protein flour to provide a palatable food product was determined. Formulas for peanut and soy flours included beverages and soups, main dishes, breads, cereal products, and desserts. Formulas for cottonseed flour were limited to breads and cereal products.

All products were evaluated for appearance, texture, flavor, and acceptability by a panel at the Agricultural Research Center and at Howard University. Nutritive values in terms of food energy, protein, and essential amino acids of the ready-to-eat food were calculated for selected formulas

that were prepared in either the family size or the quantity size.

The formulas are intended only as guidelines for using cottonseed, peanut, and soy flours in everyday meals. Persons responsible for food preparation can modify the recipes, as required, to satisfy flavor preferences of people in the various developing countries. The foods available as well as food preparation facilities in the home, school, or community will determine which of the formulas can be used successfully.

The formulas are for 5 and 50 servings for use by families and community groups in many developing countries. Ingredients are given in U.S. and avoirdupois units which can be translated into units of measures commonly used in the country where cottonseed, peanut, or soy flour is available.

INTRODUCTION

Three major oilseeds—cottonseed, peanut, and soybean—are grown in many areas of the world where food deficits exist. These plants contain large concentrations of protein which are suitable for human consumption when properly processed into flour. The purpose of this study was to develop basic formulas, food combinations, and preparation procedures for cottonseed, peanut, and soybean flours.

Because the formulas must be suitable for use by families and community groups in various developing countries of the world, information was obtained on cultural and acceptance patterns, socioeconomic status, and indigenous foods and facilities available in these countries. Commercial vegetable protein supplements such as Fortifex, Pronutro, Peruvita, Incaparina, and

Saridelle were reconstituted and sampled to gain background information on the type of beverage supplements accepted by children of developing countries where milk is in short supply.¹

In this work, formulas were developed that were representative of the food products prepared in a country where the plant protein flour might be used. Because a major problem in some countries is a dietary deficiency of protein and calories, especially in children, beverages, soups, stews, and "finger" foods suitable for

¹ Trade names are used in this publication solely for the purpose of providing specific information. Mention of a trade name does not constitute a guarantee or warranty of the product by the U.S. Department of Agriculture or an endorsement by the Department over other products not mentioned.

children were included. Other formulas were for breads, cereal products, main dishes, and desserts. Developing recipes for cottonseed flour was limited to breads and cereal products because a cottonseed flour with good functional and flavor properties was not available in quantity at the time of this work.

The high content of gossypol and gossypol-like substances in the glands give cottonseed flour an unpleasant flavor and greenish color. The Southern Utilization Research and Development Division has developed a glanded cottonseed flour of low gossypol content with improved flavor and color. A glandless variety of cottonseed that is light colored

and mild flavored has been developed through breeding but will not be available in quantity for a few years.²

The Northern Utilization Research and Development Division has developed processing methods which improved the functional properties and flavor quality of soy flour.³ Two processes, the modified extrusion process and the village process, were used to produce soy flour for this investigation.

All food products made with the oilseed flours were evaluated for appearance, texture, flavor, and acceptability, and nutritive values were calculated for selected food products.

PROCEDURE

The Southern Utilization Research and Development Division, New Orleans, La., supplied the cottonseed and peanut flours for the study. Flour made from glanded and glandless cottonseed were used in developing formulas. The soy flour, processed by the village or the extrusion method, was supplied by the Northern Utilization and Development Division, Peoria, Ill. Proximate composition of samples of cottonseed, peanut, and soy flour was determined by the Utilization Research Divisions.

Formulas were developed by first determining the maximum amount of cottonseed, peanut, or soy flour that could be used in each product. The percentage by weight of each flour in the total formula, and, if applicable, the percentage of wheat replaced by weight and by volume was calculated. When feasible, the precooked plant protein flours were added to mixtures after the food product was cooked. After the food was combined, volume and weight of the food before and after cooking were recorded. At least two replications were made on each formula. Weights of 1-cup quantities of new products or new ingredients in the formulas were recorded to determine the density of the samples.

Informal evaluation by a laboratory panel was obtained on satisfactory products. When possible, foreign visitors to the laboratory were enlisted to evaluate foods representative of their countries (figs. 1 and 2). At Howard University, the formulas developed by Human Nutrition Research Division were prepared and evaluated by a panel composed of students from Africa, Nationalist China, India, and West Indian countries, and two faculty members who had lived in India

(fig. 3). On one occasion at Howard University, a luncheon was prepared from selected USDA formulas and evaluated by a panel composed of four Indian students and the two faculty members who had lived in India. The luncheon consisted of vegetable soup, bean stew, puris, lemon cookies, and a beverage, all prepared with peanut flour.

When a family-size formula produced a satisfactory product, it was expanded to 50 portions. Occasionally problems were encountered in obtaining the same flavor and acceptability in the 50-portion formulas as in the original formula, but by proper adjustment of ingredients the original flavor and acceptability could be reproduced.

The percentage of peanut, soy, or cottonseed flour in the cooked product, calories per 100 grams and per portion of ready-to-eat food, and the contribution of protein in grams were calculated for each product. Content of 10 essential amino acids in the basic ingredients in the formulas was tabulated to aid in the evaluation of nutritive values of the foods. The essential amino acid content was also calculated for each prepared food product.⁴

² Gastrock, E. A., D'Aquin, E. L., Eaves, P. H., and Cross, D. E. Edible flour from cottonseed by liquid classification using hexane. *Cereal Sci. Today* 14 (1): 8-11. 1969.

³ Mustakas, G. C., Griffin, E. L., Jr., Allen, L. E., and Smith, O. B. Production and nutritional evaluation of extrusion-cooked full-fat soybean flour. *Jour. Amer. Oil Chem. Soc.* 41 (9): 607-614. 1964; and Albrecht, W. J., Mustakas, G. C., McGhee, J. E., and Griffin, E. L., Jr. A simple method for making full-fat soy flour. *Cereal Sci. Today* 12(3): 81-83. 1967.

⁴ Orr, M. L., and Watt, B. K. Amino acid content of foods. U.S. Dept. Agr. Home Econ. Res. Rpt. 4, 82 pp. 1957.



Figure 1.—A group of visitors who sampled foods prepared with the protein-rich cottonseed, peanut, and soy flours



Figure 2.—Foreign visitors taste-test foods prepared with protein-rich cottonseed, peanut, and soy flours



Figure 3.—Howard University students evaluate foods prepared with peanut and soy flour

RESULTS

Chemical analyses by the Northern and Southern Research and Development Divisions showed that low-fat cottonseed and peanut flours contained 10 to 11 percent nitrogen and full-fat soy flour, 6.5 to 6.8 percent nitrogen (see Appendix, table 1). Factors for calculating protein from nitrogen content of food are 5.30 for cottonseed, 5.46 for peanut, and 5.71 for soybean.⁵

The food formulas developed for cottonseed, peanut, and soy flour are given on pages 7 to 37. In cereal products such as porridge, cereal-vegetable combinations, batters, and doughs, peanut and soy flours could be used successfully to replace part of the cornmeal or wheat flour. Peanut and soy flours also could be used in beverages, soups, and stews.

The panel at the Research Center rated the palatability of most of the food products prepared with

peanut and soy flours from fairly good to very good (tables 2 and 3). Foods prepared with peanut flour that received very good scores were curry, creole eggplant, carrot soup, lentil soup, bean soup, biscuits, rice-spinach, peanut cookies, and drop sugar cookies. The soy products rated very good were bean cake, creole eggplant, biscuits, cornbread with egg, cornmeal squares, seasoned rice, rice-spinach, and puff-puff doughnut balls. Some of the food products are illustrated in figures 4 to 8.

The panel described the mouth-feel of bean stew made with peanut flour and soup made with soy flour as chalky. Breads made with peanut flour were considered tender but slightly dry; the same formula made with soy flour was described as being rich and yellow although one member of the panel thought the bread was slightly gummy. When these flours were added to cornmeal porridge, panel members detected a raw flavor. Cornbread made with egg and peanut flour was described as "moist to the right degree, mild and sweet;" the soy

⁵ Watt, B. K., and Merrill, A. L. Composition of foods—raw, processed, prepared. U.S. Dept. Agr., Agr. Handb. 8, 190 pp. 1963.



Figure 4.—Beverage and cookies made with protein-rich peanut or soy flour



Figure 5.—Nutritious vegetable soup prepared with cottonseed, peanut, or soy flour and served with cornmeal crisps



Figure 6.—Garbanzo curry and puris prepared with soy or peanut flour make a nutritious meal

cornbread samples were thought to be rather compact and gritty.

Palatability scores were poor for some of the food products prepared with the early experimental samples of cottonseed flour because of the characteristic green color and bitter flavor. As processing methods improved, later samples tested in breads, biscuits, bean soup, cornmeal porridge, and noodles received good to very good scores for appearance, aroma, texture, flavor, and acceptability. Soups made with cottonseed flour as an additive were slightly curdled; panel members remarked on the sweet flavor but grainy texture. Bread with 11 percent cottonseed content was tender; one panel member thought it slightly dry. Cottonseed flour biscuits were slightly compact and lacked a biscuit flavor; however, no mention was made about color or bitter flavor.

Food products made with glandless cottonseed flour had better acceptability than those made with glanded cottonseed flour (table 4). Yeast rolls, biscuits, bean soup, and noodles made with glandless cottonseed were rated fairly good to good in acceptability by the laboratory panel. Foods made with glanded cottonseed flour were rated fairly good to poor in acceptability. Flavor and aroma were the quality characteristics influenced by the addition of glanded cottonseed flour.

The yeast breads made with cottonseed flour, peanut flour, and soy flour are illustrated in figure 9. Volume was good for all the breads; texture was slightly less fine-grained than the control made with all wheat flour. However, breads prepared in developing countries usually have a more coarse, firm texture than breads in the United States.

Of the 18 formulas with peanut flour evaluated by the Howard University panel, 14 were rated good to very good. Ten of the recipes—bean cake, beans and rice, rice-spinach, cornbread, noodles, puris, sweetpotato puree, tortillas, cookies, and puff-puff doughnuts—received good to excellent ratings. Others were considered fairly good, but the beverage, biscuits, curry, and porridge were poorly accepted (table 5).

In general, soy products were not rated as good as the products prepared with peanut flour. Of the soy products evaluated, bean cakes, beans and rice, cinnamon cookies, and puff-puff doughnuts were the best liked. Four panel members rated the flavor of sweetpotato puree made with soy flour low, although it was considered very good when made with peanut flour.

The majority of food products prepared with peanut flour for the luncheon at Howard University were very acceptable to panel members, although many on the panel were accustomed to more highly seasoned food than provided by these formulas which were designed



Figure 7.—Cookies prepared with (a) soy flour, (b) peanut flour, and (c) cottonseed flour



Figure 8.—Yeast breads made (from left to right) with soy, peanut, and cottonseed flours and cooked by (a) baking, (b) steaming, and (c) frying



CONTROL Cottonseed Peanut Soy

Figure 9.—Baked yeast breads made with 11 percent cottonseed, peanut, or soy flour compared with control made from all wheat flour

for the young child. The puris and lemon cookies in the luncheon were rated very good and good, respectively. The peanut beverage was unacceptable to this adult consumer group.

Calorie values for the cottonseed, peanut, and soy flours were similar to cornmeal and wheat flour, and protein content was 3 to 6 times greater (table 6). When peanut, soy, or cottonseed flours replaced cornmeal or wheat flour in a formula, the protein content per 100 grams ready-to-eat food was increased in proportion to the amount used (tables 7, 8, and 9).

The content of essential amino acids in 100 grams of cottonseed, peanut, and soy flours compared favorably

with that of nonfat dry milk. In contrast, tapioca flour, which is used in many developing countries, makes a small contribution to the amino acid content of a prepared food product made with this ingredient. Amino acid values were similar for comparable food products made with additions of peanut flour, soy flour, or cottonseed flour. A beverage for babies made with either soy flour or peanut flour, stabilized with a small amount of tapioca flour was similar to human milk in amino acid content but not as good as cow's milk in all the essential amino acids. Volume-weight equivalents of the plant protein flours and ready-to-eat food products are given in tables 10, 11, and 12, for conversion of 100-gram portions to servings.

FAMILY RECIPES FOR COTTONSEED FLOUR

Breads

Batter Bread

(Cottonseed flour)

Compressed yeast	2 2/3 tablespoons, packed
or	or
Active dry yeast	2 tablespoons
Lukewarm water	2 1/4 cups
Cottonseed flour	1 cup
Wheat flour	4 cups
Salt	1 tablespoon
Sugar	1/4 cup
Oil or melted shortening . .	1/3 cup

Add the yeast to the water in a large mixing bowl. Let stand 10 minutes.

Sift the dry ingredients together. Add half of the dry ingredients and oil to the yeast mixture. Beat 2 minutes. Scrape the sides of the bowl often.

Add remaining dry ingredients and beat until smooth, about 2 minutes longer.

Scrape batter from the sides of the bowl, cover, and let rise in a warm place until about double in size.

Beat the batter for 1 minute. Divide batter in half and place in two greased loaf pans.

Let rise again until batter is about 1 inch from the top of the pan.

Bake in a moderate oven about 25 minutes or until brown.

Yield: 2 loaves

Biscuits

(Cottonseed flour)

Wheat flour	1 1/2 cups
Cottonseed flour	1/4 cup
Baking powder	2 teaspoons
Salt	3/4 teaspoon
Cooking fat	1/3 cup
Water	3/4 cup less 1 tablespoon

Sift together the flours, baking powder, and salt.
Add the fat and mix in the fat with a fork.
Stir in the water.
Drop by spoonfuls onto a greased baking sheet.
Bake in a hot oven until golden brown.

Yield: 5 servings, 2 biscuits each

Rolls

(Cottonseed flour)

Compressed yeast	2 teaspoons, packed
Lukewarm water	1 cup
Wheat flour	3 cups
Cottonseed flour	3/4 cup
Sugar	2 tablespoons
Salt	1 teaspoon
Melted cooking fat or oil .	2 tablespoons

Add yeast to water in mixing bowl. Let stand 10 minutes.
Add all ingredients to the water and mix to a stiff dough.
Knead for 10 minutes.
Put dough in a warm place to rise until dough is double in size.
Punch down the dough. Pinch off 10 pieces of dough and shape into rolls.
Put in a warm place to rise until double in size.
Bake in a moderate oven 12 minutes or until golden brown.

Yield: 5 servings, 2 rolls each

Note: These rolls may be steamed, boiled, or fried in oil if baking facilities are not available.

Yeast Bread

(Cottonseed flour)

Active dry yeast	1 1/2 tablespoons
Lukewarm water	2 cups
Wheat flour	About 5 cups
Cottonseed flour	2 cups
Sugar	3 tablespoons
Salt	1 tablespoon
Cooking fat or oil	1/4 cup

Dissolve yeast in lukewarm water.
Add half the wheat flour, and the cottonseed flour and salt to water and yeast.
Stir in the fat or oil and beat until the mixture is smooth.
Add remaining wheat flour and knead on floured board until dough is smooth and elastic (about 12 minutes).
Form dough into a smooth ball.
Place in a greased bowl; turn dough to grease the top.
Cover and let rise in a warm place until dough has increased 2 to 3 times in size.
Punch down and shape into loaves and place in greased pans.
Let loaves of bread rise in a warm place until double in size.
Bake in a hot oven about 35 minutes.

Yield: 3 small or 2 large loaves

Soup

Bean Soup

(Cottonseed flour)

Dry beans	1 cup
Water	1 1/4 quarts
Oil	1/4 cup
Chopped onion	1/3 cup
Chopped celery	1/3 cup
Chopped carrot	1/2 cup
Cooked tomatoes	2 cups
Salt	3/4 teaspoon
Dry chili pepper	1 small
Cottonseed flour	1/4 cup

Wash beans. Put beans in a pot with the water. Bring to a boil, boil 2 minutes.

Remove from heat and let soak 1 hour.
 Cook onion, celery, and carrots in oil until onions are clear.
 Combine all ingredients except cottonseed flour. Cook slowly until beans are tender.
 Remove from heat, stir in cottonseed flour and serve.

Yield: 5 servings, 1 cup each

Cereal Products

Cornmeal Porridge (Cottonseed flour)

Cornmeal	3/4 cup
Salt	3/4 teaspoon
Cold water	1 cup
Boiling water	3 cups
Cottonseed flour	1/2 cup

Mix the cornmeal, salt, and cold water together.
 Stir into boiling water.

Cook for 15 minutes, stirring frequently.
 Stir in cottonseed flour and serve.

Yield: 5 servings, 1 cup each

Noodles (Cottonseed flour)

Wheat flour	1 1/2 cups
Cottonseed flour	1/2 cup
Salt	1 1/2 teaspoons
Egg, beaten	1
Water	6 tablespoons

Combine all ingredients in a mixing bowl.
 Mix well. Knead dough lightly.
 Divide dough into two parts. Place on floured surface.
 Roll into thin sheets.
 Cut into strips or squares. Let dry on a clean surface.
 Cook noodles 15 minutes in boiling water or soup in a covered pan.

Yield: 5 servings, about 1 cup each

FAMILY RECIPES FOR PEANUT FLOUR

Beverages and Soups

Bean Soup (Peanut flour)

Dry beans	1 cup
Water	1 1/4 quarts
Oil	1/4 cup
Chopped onion	1/3 cup
Chopped celery	1/3 cup
Chopped carrot	1/2 cup
Cooked tomatoes	2 cups
Salt	3/4 teaspoon
Dry chili pepper	1 small
Peanut flour	1/4 cup

Wash beans.
 Put beans in a pot with the water.
 Bring to a boil, boil 2 minutes.
 Remove from heat and let soak 1 hour.
 Cook onion, celery, and carrots in oil until onions are clear.
 Combine all ingredients except the peanut flour.

Cook slowly until beans are tender.
 Remove from heat. Stir in peanut flour and serve.

Yield: 5 servings, 1 cup each

Carrot Soup (Peanut flour)

Chopped onion	1/4 cup
Cooking fat	2 tablespoons
Water	4 cups
Chopped celery	1 cup
Shredded carrots	4 cups
Salt	1 1/4 teaspoons
Pepper	1/8 teaspoon
Soy sauce	2 teaspoons
Peanut flour	1 cup

Cook onion in fat until onion is clear but not brown.
 Combine all ingredients except peanut flour.
 Cook slowly until vegetables are done.
 Remove from heat, stir in the peanut flour and serve.

Yield: About 5 servings, 1 cup each

Lentil Soup (Peanut flour)

Dry lentils	1 cup
Water	2 1/4 quarts
Chopped onion	1/4 cup
Chopped carrot	1 cup
Chopped celery or native vegetable	1/2 cup
Salt	2 teaspoons
Pepper	1/8 teaspoon
Peanut flour	1/2 cup

Wash lentils. Put lentils in a large pot with the water.
Bring to a boil.
Cook slowly about 1 1/2 hours.
Add remaining ingredients except peanut flour and cook
30 minutes longer.
Remove from heat and stir in peanut flour.
If soup is too thick, add hot water.

Yield: 5 servings, 1 cup each

Peanut Beverage (Peanut flour)

Water	4 cups
Tapioca or cassava flour	1 tablespoon
Salt	1/2 teaspoon
Sugar	2 tablespoons
Peanut flour	1 cup

Combine the water, tapioca or cassava flour, and salt in a
cooking pot. Boil for 10 minutes. Remove from heat.
Mix sugar and peanut flour together and stir into the
water mixture.
Beat to mix well.

Yield: 4 cups

Sweetpotato Puree (Peanut flour)

Mashed, cooked sweet- potatoes	1 cup, packed
Sugar	2 teaspoons
Salt	1/4 teaspoon
Lemon juice	2 tablespoons
Water	1 cup
Peanut flour	3/4 cup

Combine all ingredients; mix well.
Heat and serve.

Yield: 5 servings, about 1/3 cup each

Vegetable Soup (Peanut flour)

Chopped onion	1/4 cup
Chopped green pepper	1/3 cup
Cooking fat	2 tablespoons
Salt	1/2 teaspoon
Pepper	1/8 teaspoon
Water	2 cups
Tomatoes	1 1/2 cups
Diced potatoes or local vegetable	1 cup
Sugar	1 teaspoon
Peanut flour	3/4 cup

Cook onion and pepper in fat until onion is clear but not
brown.

Combine all ingredients except peanut flour.

Cook slowly until potatoes are done.

Remove from heat, stir in the peanut flour and serve.

Yield: 5 servings, 1 cup each

Main Dishes

Bean Cakes (Peanut flour)

Chopped onion	1/4 cup
Cooking oil	3 tablespoons
Cooked, drained beans	2 1/3 cups
Salt	1/2 teaspoon
Red pepper	To taste
Cooked tomatoes	1/3 cup
Peanut flour	1/3 cup

Cook onions in the oil until clear but not brown.
Remove from heat.

Add all ingredients to onion mixture.

Mix well.

Shape the bean mixture into cakes and fry in a little oil
until brown on one side, turn to brown the other
side.

Yield: 5 servings, 1 cake each

Bean Curry

(Peanut flour)

Dry beans or chick peas . .	1 1/2 cups
Water	5 cups
Salt	3/4 teaspoon
Cooking fat or oil	1/2 cup
Chopped onion	1/2 cup
Peanut flour	2/3 cup
Curry powder	1 tablespoon

Sort and wash beans.
Boil water, add beans.
Cook 3 hours or until tender.
Add the fat, onions, peanut flour, and curry.
Stir to mix.
Cook until curry thickens, stirring occasionally.

Yield: 5 servings, 1 cup each

Beans and Rice

(Peanut flour)

Dry beans	1 1/4 cups
Water	1 1/2 quarts
Salt	1 tablespoon
Pepper	1/8 teaspoon
Thyme or local seasoning .	Few grains
Chopped onion	1/2 cup
Cooking oil	1/3 cup
Rice	1/2 cup
Tomato paste	1/2 cup
Peanut flour	1/4 cup

Wash beans.
Put beans in a pot with the water.
Bring to a boil, boil 2 minutes.
Remove from heat and let soak 1 hour.
Add seasonings.
Cook onion in the oil until onion is clear.
Combine all ingredients except the peanut flour.
Cook slowly until beans are tender.
Remove from heat. Stir in peanut flour and serve.

Yield: 5 servings, 1 cup each

Bean Stew

(Peanut flour)

Dry beans or chick peas . .	1 1/2 cups
Water	5 cups
Salt	3/4 teaspoon
Cooking fat or oil	1/2 cup
Chopped onion	1/2 cup
Tomatoes	2 cups
Peanut flour	2/3 cup

Sort and wash beans.
Boil water, add beans.
Cook 3 hours or until tender.
Add the fat, onions, and tomatoes to the beans.
Stir to mix.
Cook until stew thickens, stirring occasionally.
Remove from heat. Add the peanut flour and serve.

Yield: 5 servings, 1 cup each

Creole Eggplant

(Peanut flour)

Medium eggplant	1
Onion, chopped	1/4 cup
Cooking fat or oil	3 tablespoons
Cooked tomatoes	2 cups
Chopped sweet pepper . . .	1/4 cup
Salt	1 teaspoon
Brown sugar	1 tablespoon
Water	1/4 cup
Peanut flour	2/3 cup

Peel eggplant and cut into cubes.
Cook onion in fat or oil until clear.
Combine all ingredients except peanut flour.
Cook mixture until eggplant is tender (about 15 minutes).
Remove from heat. Stir in peanut flour.

Yield: 5 servings, about 3/4 cup each

Rice-Spinach (Peanut flour)

Rice	1 cup
Cooking oil	1/3 cup
Chopped onion	1/4 cup
Boiling water	2 cups
Salt	1 1/2 teaspoons
Chopped fresh spinach or other tender greens ...	2 quarts
Peanut flour	1/3 cup

In a large pot cook the rice in oil, stirring constantly, until rice is lightly browned.

Add onions and cook until onions are clear.

Add boiling water and salt to the rice mixture, cover and cook 20 minutes.

Stir in spinach or other greens.

Cover and cook 15 minutes longer, stirring occasionally.

Remove from heat. Stir in peanut flour and serve.

Yield: 5 servings, 1 cup each

Breads

Biscuits (Peanut flour)

Wheat flour	1 1/2 cups
Peanut flour	1/4 cup
Baking powder	2 teaspoons
Salt	3/4 teaspoon
Cooking fat	1/3 cup
Water	About 1 cup less 2 tablespoons

Sift together the flours, baking powder, and salt.

Add the fat and mix in the fat with a fork.

Stir in the water.

Drop by spoonfuls onto a greased baking sheet.

Bake in a hot oven until golden brown.

Yield: 5 servings, 2 biscuits each

Chapati (Peanut flour)

Wheat flour	3/4 cup
Whole wheat flour	2/3 cup
Peanut flour	1 cup
Salt	1/2 teaspoon
Cooking oil	2 tablespoons
Water	About 2/3 cup

Combine all ingredients.

Mix well. Knead for 5 minutes.

Divide dough into 10 balls.

Roll out each ball into a circle about 7 inches diameter.

Cook on hot griddle, turning frequently. Cook about 1 minute.

Hold over high heat to puff chapati.

Yield: 5 servings, 2 chapati each

Note: If preferred, omit wheat flour and use 1 1/2 cups whole wheat flour (atta).

Cornbread (Peanut flour)

Cornmeal	1 cup
Wheat flour	3/4 cup
Peanut flour	3/4 cup
Sugar	1/4 cup
Baking powder	4 teaspoons
Salt	3/4 teaspoon
Melted cooking fat or oil .	2 tablespoons
Egg, beaten	1
Water	1 1/4 cups

Combine all ingredients in a bowl. Stir to mix.

Pour mixture into a greased baking pan. Bake in a hot oven 30 minutes or until golden brown.

Yield: 5 servings, 1 piece each

Cornmeal pancakes: The cornbread batter may be dropped by spoonfuls onto a hot greased pan or metal sheet. Cook slowly until the surface is covered with bubbles.

Turn and cook until the bottom is well browned.

Cornbread Without Egg (Peanut flour)

Cornmeal	1 cup
Wheat flour	3/4 cup
Peanut flour	1/4 cup
Sugar	1/4 cup
Baking powder	5 teaspoons
Salt	3/4 teaspoon
Melted cooking fat or oil .	2 tablespoons
Water	1 1/4 cups

Combine all ingredients in a bowl.
Stir to mix.
Pour mixture into a greased baking pan.
Bake in a hot oven about 40 minutes or until golden brown.

Yield: 5 servings, 1 piece each

Puris (Peanut flour)

Wheat flour or atta	1 1/2 cups
Peanut flour	2/3 cup
Salt	1 teaspoon
Cooking fat or oil	1/4 cup
Water	1/2 cup

Mix all ingredients.
Knead dough 5 minutes.
Roll out dough very thin into 6-inch circles.
Drop each circle into hot fat.
As soon as dough begins to puff, about 1/2 minute, press the puris lightly with a perforated pancake turner.
Turn to brown lightly on the other side.
Drain on paper and serve hot.

Yield: 5 servings, 2 puris each

Rolls (Peanut flour)

Compressed yeast	2 teaspoons, packed
Lukewarm water	1 cup
Wheat flour	3 cups
Peanut flour	1 1/4 cups
Sugar	2 tablespoons
Salt	1 teaspoon
Melted cooking fat or oil .	2 tablespoons

Add yeast to water in mixing bowl, let stand 10 minutes.
Add all ingredients to the water and mix to a stiff dough.
Knead for 10 minutes.
Put dough in a warm place to rise until dough is double in size.
Punch down the dough.
Pinch off 10 pieces of dough and shape into rolls.
Put in a warm place to rise until double in size.
Bake in a moderate oven 12 minutes or until rolls are golden brown.
If desired, dough may be formed into a loaf, allowed to rise until double in bulk, and baked in a hot oven 35 minutes.

Yield: 5 servings, 2 rolls each

Note: These rolls may be steamed, boiled, or fried in oil if baking facilities are not available.

Tortillas (Peanut flour)

Boiling water	1 1/2 cups
Cornmeal	1 cup
Cooking oil	1 tablespoon
Salt	1 teaspoon
Peanut flour	3/4 cup

Stir water into the cornmeal; add salt and oil and cook until thickened.
Remove from heat.
Add peanut flour and mix well.
Shape about 3 tablespoons of the mixture into a round ball.
Press out flat.
Cook tortillas on a lightly greased griddle, frying pan, or clean thick sheet of metal.
Turn before they brown.

Yield: 5 servings, about 2 tortillas each

Cereal Products

Cornmeal Porridge (Peanut flour)

Cornmeal	3/4 cup
Salt	3/4 teaspoon
Cold water	1 cup
Boiling water	3 cups
Peanut flour	1/2 cup

Mix the cornmeal, salt, and cold water together.
Stir into boiling water.
Cook for 15 minutes, stirring frequently.
Stir in peanut flour and serve.

Yield: 5 servings, 1 cup each

Noodles (Peanut flour)

Wheat flour	1 1/2 cups
Peanut flour	1/2 cup
Salt	1 1/2 teaspoons
Egg, beaten	1
Water	6 tablespoons

Combine all ingredients in a mixing bowl.
Mix well.
Knead dough lightly.
Divide dough into two parts.
Place on floured surface.
Roll out into thin sheets.
Cut into strips or squares. Let dry on a clean surface.
Cook noodles 15 minutes in boiling water or soup in a covered pan.

Yield: 5 servings, about 1 cup each

Noodles Without Egg (Peanut flour)

Wheat flour	1 cup
Peanut flour	1/2 cup
Salt	1/4 teaspoon
Water	1/2 cup

Combine all ingredients in a mixing bowl.
Mix well.
Knead dough lightly.
Divide dough into two parts.
Place on floured surface.
Roll out into thin sheets.
Cut into strips or squares. Let dry on a clean surface.
Cook noodles 15 minutes in boiling water or soup in a covered pan.

Yield: 5 servings, about 1 cup each

Seasoned Rice (Peanut flour)

Rice	1 cup
Cooking oil	1/4 cup
Chopped onion	1/3 cup
Salt	2 1/4 teaspoons
Pepper	1/8 teaspoon
Soy sauce	2 teaspoons
Boiling water	4 cups
Peanut flour	2/3 cup

Cook rice in oil until lightly browned, stirring constantly.
Add onion and cook until onion is clear.
Stir salt, pepper, soy sauce, and water into the rice mixture.
Cover and cook 20 minutes. Remove from heat, add peanut flour, and stir to mix.

Yield: 5 servings, 2/3 cup each

Desserts

Lemon Cookies (Peanut flour)

Sugar	1 cup
Cooking fat	2 tablespoons
Water	1/2 cup
Lemon juice	1 1/2 tablespoons
Grated rind, if desired ...	1 teaspoon
Salt	1/4 teaspoon
Wheat flour	1 cup
Peanut flour	1 1/3 cups
Baking powder	2 teaspoons

Mix sugar and fat.
 Add remaining ingredients and mix well.
 Place teaspoons of cooky dough on a greased baking sheet.
 Press cookies down with a fork or round container.
 Bake in moderate oven 10 minutes or until lightly browned.

Yield: 24 cookies, about 2 1/2-inch diameter

Peanut Cookies (Peanut flour)

Sugar	2/3 cup
Cooking fat or oil	3/4 cup
Water	1/2 cup
Vanilla	1 teaspoon
Salt	1 teaspoon
Wheat flour	1 1/4 cups
Peanut flour	1 1/2 cups
Baking powder	2 teaspoons
Chopped peanuts	1/2 cup

Mix sugar and fat.
 Add remaining ingredients and mix well.
 Place teaspoons of cooky dough on a greased baking sheet.
 Press cookies down with a fork or round container.
 Bake in moderate oven 10 minutes or until lightly browned.

Yield: 36 cookies, about 2 1/2-inch diameter

Puff-Puff Doughnut Balls (Peanut flour)

Wheat flour	1 cup
Peanut flour	3/4 cup
Sugar	2 tablespoons

Salt	1/4 teaspoon
Nutmeg or cinnamon	1/4 teaspoon
Baking powder	1 1/2 teaspoons
Egg, beaten	1
Water	3/4 cup

Combine all ingredients in a bowl.
 Stir to mix.
 Drop by spoonfuls into hot fat.
 Fry until brown on one side, turn to brown the other side.
 Remove from fat, drain, and roll in sugar.

Yield: 15 balls, about 1 3/4-inch diameter

Rice Jelly (Peanut flour)

Rice flour	1/4 cup
Cold water	1/4 cup
Boiling water	2 cups
Salt	1/4 teaspoon
Sugar	1 tablespoon
Peanut flour	2/3 cup
*Grated orange rind	1/4 teaspoon
*Orange juice	1/4 cup

Mix rice flour with the cold water to make a thin paste.
 Stir into the boiling water.
 Add salt and sugar and cook until the mixture is transparent, about 10 minutes.
 Remove from heat, stir in peanut flour, orange rind, and orange juice.

Yield: 5 servings, about 1/2 cup each

* Lemon or other desired flavoring may be used.

FAMILY RECIPES FOR SOY FLOUR

Beverages and Soups

Bean Soup (Soy flour)

Dry beans	1 cup
Water	1 1/4 quarts
Oil	1/4 cup
Chopped onion	1/3 cup
Chopped celery	1/3 cup
Chopped carrot	1/2 cup
Cooked tomatoes	2 cups
Salt	3/4 teaspoon
Dry chili pepper	1 small
Soy flour	1/4 cup

Wash beans. Put beans in a pot with the water. Bring to a boil, boil 2 minutes. Remove from heat and let soak 1 hour. Cook onion, celery, and carrots in oil until onions are clear.

Combine all ingredients except the soy flour. Cook slowly until beans are tender.

Remove from heat, stir in soy flour, and serve.

Yield: 5 servings, 1 cup each

Carrot Soup (Soy flour)

Chopped onion	1/4 cup
Cooking fat	2 tablespoons
Water	4 cups
Chopped celery	1 cup
Shredded carrots	4 cups
Salt	1 1/4 teaspoons
Pepper	1/8 teaspoon
Soy sauce	2 teaspoons
Soy flour	1 cup

Cook onion in fat until onion is clear but not brown.

Combine all ingredients except soy flour.

Cook slowly until vegetables are done.

Remove from heat, stir in the soy flour and serve.

Yield: About 5 servings, 1 cup each

Lentil Soup (Soy flour)

Dry lentils	1 cup
Water	2 1/4 quarts
Chopped onion	1/4 cup
Chopped carrot	1 cup
Chopped celery or native vegetable	1/2 cup
Salt	2 teaspoons
Pepper	1/8 teaspoon
Soy flour	1/2 cup

Wash lentils. Put lentils in a large pot with water.

Bring to a boil.

Cook slowly about 1 1/2 hours.

Add remaining ingredients except soy flour and cook 30 minutes longer.

Remove from heat and stir in soy flour.

If soup is too thick, add hot water.

Yield: 5 servings, 1 cup each

Soy Beverage (Soy flour)

Water	4 cups
Tapioca or cassava flour ..	1 tablespoon
Salt	1/2 teaspoon
Sugar	2 tablespoons
Soy flour	1 cup

Combine the water, tapioca or cassava flour, and salt in a cooking pot. Boil for 10 minutes. Remove from heat.

Mix sugar and soy flour together and stir into the water mixture.

Beat to mix well.

Yield: 4 cups

Sweetpotato Puree

(Soy flour)

Mashed cooked sweet-

potatoes	1 cup, packed
Sugar	2 teaspoons
Salt	1/4 teaspoon
Lemon juice	2 tablespoons
Water	1 cup
Soy flour	3/4 cup

Combine all ingredients; mix well.

Heat and serve.

Yield: 5 servings, about 1/3 cup each

Vegetable Soup

(Soy flour)

Chopped onion	1/4 cup
Chopped green pepper ...	1/3 cup
Cooking fat	2 tablespoons
Salt	1/2 teaspoon
Pepper	1/8 teaspoon
Water	2 cups
Tomatoes	1 1/2 cups
Diced potatoes or local vegetable	1 cup
Sugar	1 teaspoon
Soy flour	3/4 cup

Cook onion and pepper in fat until onion is clear but not brown.

Combine all ingredients except soy flour.

Cook slowly until potatoes are done.

Remove from heat, stir in the soy flour, and serve.

Yield: 5 servings, 1 cup each

Main Dishes

Bean Cakes

(Soy flour)

Chopped onion	1/4 cup
Cooking oil	3 tablespoons
Cooked, drained beans ...	2 1/3 cups
Salt	1/2 teaspoon
Red pepper	To taste
Cooked tomatoes	1/3 cup
Soy flour	1/3 cup

Cook onions in the oil until clear but not brown.

Remove from heat.

Add all ingredients to onion mixture. Mix well.

Shape the bean mixture into cakes and fry in a little oil until brown on one side, turn to brown the other side.

Yield: 5 servings, 1 cake each

Bean Curry

(Soy flour)

Dry beans or chick peas ..	1 1/2 cups
Water	5 cups
Salt	3/4 teaspoon
Cooking fat or oil	1/2 cup
Chopped onion	1/2 cup
Soy flour	2/3 cup
Curry powder	1 tablespoon

Sort and wash beans.

Boil water, add beans. Cook 3 hours or until tender.

Add the fat, onions, soy flour, and curry. Stir to mix.

Cook until curry thickens, stirring occasionally.

Yield: 5 servings, 1 cup each

Beans and Rice

(Soy flour)

Dry beans	1 1/4 cups
Water	1 1/2 quarts
Salt	1 tablespoon
Pepper	1/8 teaspoon
Thyme or local seasoning .	Few grains
Chopped onion	1/2 cup
Cooking oil	1/3 cup
Rice	1/2 cup
Tomato paste	1/2 cup
Soy flour	1/4 cup

Wash beans. Put beans in a pot with the water. Bring to a boil, boil 2 minutes. Remove from heat and let soak 1 hour.

Add seasonings.

Cook onion in the oil until onion is clear.

Combine all ingredients except the soy flour. Cook slowly until beans are tender.

Remove from heat. Stir in soy flour and serve.

Yield: 5 servings, 1 cup each

Bean Stew

(Soy flour)

Dry beans or chick peas . .	1 1/2 cups
Water	5 cups
Salt	3/4 teaspoon
Cooking fat or oil	1/2 cup
Chopped onion	1/2 cup
Tomatoes	2 cups
Soy flour	2/3 cup

Sort and wash beans.

Boil water, add beans. Cook 3 hours or until tender.

Add the fat, onions, and tomatoes to the beans. Stir to mix.

Cook until stew thickens, stirring occasionally. Add the soy flour and serve.

Yield: 5 servings, 1 cup each

Creole Eggplant

(Soy flour)

Medium-size eggplant	1
Onion, chopped	1/4 cup
Cooking fat or oil	3 tablespoons
Cooked tomatoes	2 cups
Chopped sweet pepper . . .	1/4 cup
Salt	1 teaspoon
Brown sugar	1 tablespoon
Water	1/4 cup
Soy flour	2/3 cup

Peel eggplant and cut into cubes.

Cook onion in fat or oil until clear.

Combine all ingredients except soy flour.

Cook mixture until eggplant is tender (about 15 minutes).

Remove from heat. Stir in soy flour.

Yield: 5 servings, about 3/4 cup each

Rice-Spinach

(Soy flour)

Rice	1 cup
Cooking oil	1/3 cup
Chopped onion	1/4 cup
Boiling water	2 cups
Salt	1 1/2 teaspoons
Chopped fresh spinach or other tender greens . . .	2 quarts
Soy flour	1/3 cup

In a large pot cook the rice in oil, stirring constantly, until rice is lightly browned. Add onions and cook until onions are clear.

Add boiling water and salt to the rice mixture, cover, and cook 20 minutes.

Stir in spinach or other greens. Cover and cook 15 minutes longer, stirring occasionally.

Stir in soy flour and serve.

Yield: 5 servings, 1 cup each

Spinach in Sauce

(Soy flour)

Chopped onion	2 tablespoons
Cooking fat or oil	2 tablespoons
Boiling water	1 cup
Salt	1 teaspoon
Soy sauce	2 teaspoons
Chopped spinach or tender greens	2 quarts
Soy flour	1 cup

Cook onion in the fat or oil until onion is clear but not brown.

Add remaining ingredients except soy flour.

Cook 10 minutes, stirring occasionally.

Remove from heat and stir in soy flour.

Yield: 5 servings, about 1/2 cup each

Breads

Biscuits

(Soy flour)

Wheat flour	1 1/2 cups
Soy flour	1/4 cup
Baking powder	2 teaspoons
Salt	3/4 teaspoon
Cooking fat	1/4 cup
Water	About 1 cup less 2 tablespoons

Sift together the flours, baking powder, and salt.

Add the fat and mix in the fat with a fork.

Stir in the water.

Drop by spoonfuls onto a greased baking sheet.

Bake in a hot oven until golden brown.

Yield: 5 servings, 1 biscuit each

Chapati (Soy flour)

Wheat flour	3/4 cup
Whole wheat flour	2/3 cup
Soy flour	1 cup
Salt	1/2 teaspoon
Cooking oil	2 tablespoons
Water	About 2/3 cup

Combine all ingredients. Mix well. Knead for 5 minutes. Divide dough into 10 balls.

Roll out each ball into a circle about 7 inches diameter. Cook on hot griddle, turning frequently. Cook about 1 minute.

Hold over high heat to puff chapati.

Yield: 5 servings, 2 chapati each

Note: If preferred, omit wheat flour and use 1 1/2 cups in place of 2/3 cup whole wheat flour (atta).

Cornbread (Soy flour)

Cornmeal	1 cup
Wheat flour	3/4 cup
Soy flour	3/4 cup
Sugar	1/4 cup
Baking powder	5 teaspoons
Salt	3/4 teaspoon
Melted cooking fat or oil	2 tablespoons
Egg, beaten	1
Water	1 1/4 cups

Combine all ingredients in a bowl. Stir to mix. Pour mixture into a greased baking pan. Bake in a hot oven 30 minutes or until golden brown.

Yield: 5 servings, 1 piece each

Cornmeal pancakes: The cornbread batter may be dropped by spoonfuls onto a hot greased pan or metal sheet. Cook slowly until the surface is covered with bubbles.

Turn and cook until the bottom is well browned.

Cornbread Without Egg (Soy flour)

Cornmeal	1 cup
Wheat flour	3/4 cup
Soy flour	1/4 cup
Sugar	1/4 cup
Baking powder	5 teaspoons
Salt	3/4 teaspoon
Melted cooking fat or oil	2 tablespoons
Water	1 1/4 cups

Combine all ingredients in a bowl. Stir to mix.

Pour mixture into a greased baking pan. Bake in a hot oven about 40 minutes or until golden brown.

Yield: 5 servings, 1 piece each

Puris (Soy flour)

Wheat flour or atta	1 1/2 cups
Soy flour	2/3 cup
Salt	1 teaspoon
Cooking fat or oil	1/4 cup
Water	1/2 cup

Mix all ingredients.

Knead dough 5 minutes.

Roll out dough very thin into 6-inch circles.

Drop each circle into hot fat.

As soon as dough begins to puff, about 1/2 minute, press the puris lightly with a perforated pancake turner.

Turn to brown lightly on the other side.

Drain on paper and serve hot.

Yield: 5 servings, about 2 puris each

Rolls (Soy flour)

Compressed yeast	2 teaspoons, packed
Lukewarm water	1 cup
Wheat flour	3 cups
Soy flour	3/4 cup
Sugar	2 tablespoons
Salt	1 teaspoon
Melted cooking fat or oil	2 tablespoons

Add yeast to water in mixing bowl, let stand 10 minutes. Add all ingredients to the water and mix to a stiff dough. Knead for 10 minutes.

Put dough in a warm place to rise until dough is double in size.

Punch down the dough. Pinch off 10 pieces of dough and shape into rolls. Put in a warm place to rise until double in size.

Bake in a moderate oven 12 minutes or until golden brown.

If desired, dough may be formed into a loaf, allowed to rise until double in size. Bake in a hot oven 35 minutes.

Yield: 5 servings, 2 rolls each

Note: These rolls may be steamed, boiled, or fried in oil if baking facilities are not available.

Tortillas

(Soy flour)

Boiling water	1 1/2 cups
Cornmeal	1 cup
Salt	1 teaspoon
Cooking oil	1 tablespoon
Soy flour	3/4 cup

Stir water into the cornmeal; add salt and oil and cook until thickened. Remove from heat. Add soy flour and mix well.

Shape about 3 tablespoons of the mixture into a round ball.

Press out flat.

Cook tortillas on a lightly greased griddle, frying pan, or clean thick sheet of metal. Turn before they brown.

Yield: 5 servings, about 2 tortillas each

Cereal Products

Cornmeal Porridge

(Soy flour)

Cornmeal	3/4 cup
Salt	3/4 teaspoon
Cold water	1 cup
Boiling water	3 cups
Soy flour	1/2 cup

Mix the cornmeal, salt, and cold water.

Stir into boiling water.

Cook for 15 minutes, stirring frequently.

Stir in soy flour and serve.

Yield: 5 servings, 1 cup each

Noodles

(Soy flour)

Wheat flour	1 1/2 cups
Soy flour	1/2 cup
Salt	1 1/2 teaspoons
Egg, beaten	1
Water	6 tablespoons

Combine all ingredients in a mixing bowl. Mix well.

Knead dough lightly.

Divide dough into two parts. Place on floured surface.

Roll into thin sheets. Cut into strips or squares. Let dry on a clean surface.

Cook noodles 15 minutes in boiling water or soup in a covered pan.

Yield: 5 servings, about 1 cup each

Seasoned Rice

(Soy flour)

Rice	1 cup
Cooking oil	1/4 cup
Chopped onion	1/3 cup
Salt	2 1/4 teaspoons
Pepper	1/8 teaspoon
Soy sauce	2 teaspoons
Boiling water	4 cups
Soy flour	2/3 cup

Cook rice in oil until lightly browned, stirring constantly.

Add onion and cook until onion is clear.

Stir salt, pepper, soy sauce, and water into the rice mixture.

Cover and cook 20 minutes. Remove from heat, add soy flour, and stir to mix.

Yield: 5 servings, 2/3 cup each

Desserts

Cinnamon Sugar Cookies

(Soy flour)

Sugar	1 cup
Cooking fat	1/2 cup
Water	6 tablespoons
Cinnamon	1 teaspoon
Salt	1/2 teaspoon
Wheat flour	1 1/4 cups
Soy flour	1 cup
Baking powder	2 teaspoons

Mix sugar and fat.

Add remaining ingredients and mix well.

Place teaspoons of cookie dough on a greased baking sheet.

Press cookies down with a fork or round container.

Bake in a moderate oven 10 minutes or until lightly browned.

Yield: 24 cookies, about 2 1/2-inch diameter

Lemon Cookies

(Soy flour)

Sugar	1 cup
Cooking fat	2 tablespoons
Water	1/2 cup
Lemon juice	1 1/2 tablespoons
Grated rind, if desired ...	1 teaspoon
Salt	1/4 teaspoon
Wheat flour	1 cup
Soy flour	1 1/3 cups
Baking powder	2 teaspoons

Mix sugar and fat.

Add remaining ingredients and mix well.

Place teaspoons of cookie dough on a greased baking sheet.

Press cookies down with a fork or round container.

Bake in a moderate oven 10 minutes or until lightly browned.

Yield: 24 cookies, about 2 1/2-inch diameter

Puff-Puff Doughnut Balls

(Soy flour)

Wheat flour	1 cup
Soy flour	3/4 cup
Sugar	2 tablespoons
Salt	1/4 teaspoon
Nutmeg or cinnamon	1/4 teaspoon
Baking powder	1 1/2 teaspoons
Egg, beaten	1
Water	3/4 cup

Combine all ingredients in a bowl. Stir to mix.

Drop by spoonfuls into hot fat. Fry until brown on one side, turn to brown the other side.

Remove from fat, drain, and roll in sugar.

Yield: 15 balls, about 1 3/4-inch diameter

Rice Jelly

(Soy flour)

Rice flour	1/4 cup
Cold water	1/4 cup
Boiling water	2 cups
Salt	1/4 teaspoon
Sugar	1 tablespoon
Soy flour	2/3 cup
*Grated orange rind	1/4 teaspoon
*Orange juice	1/4 cup

Mix rice flour with the cold water to make a thin paste. Stir into the boiling water.

Add salt and sugar and cook until the mixture is transparent, about 10 minutes.

Remove from heat, stir in soy flour, orange rind, and orange juice.

Yield: 5 servings, about 1/2 cup each

* Lemon or other desired flavoring may be used.

Soy Cookies

(Soy flour)

Sugar	1 cup
Cooking fat	1/2 cup
Water	3/4 cup
Vanilla or favorite flavoring	1 teaspoon
Salt	1/2 teaspoon
Baking powder	5 teaspoons
Soy flour	2 2/3 cups

Mix sugar and fat.

Add remaining ingredients and mix well.

Place teaspoons of cooky dough on a greased baking sheet.

Press cookies down with a fork or round container.

Bake in a moderate oven 10 minutes or until lightly browned.

Yield: 36 cookies, about 2 1/2-inch diameter

QUANTITY RECIPES FOR PEANUT FLOUR

Beverages and Soups

Bean Soup

(Peanut flour)

Yield: 50 servings, 1 cup each

Ingredient	Weight	Volume
White beans	2 pounds 10 ounces	1 1/2 quarts
Water	.....	2 gallons
Cooking oil	10 ounces	1 1/4 cups
Chopped onions	8 ounces	1 1/3 cups
Chopped carrots	12 ounces	2 1/4 cups
Chopped celery or local vegetable	8 ounces	2 cups
Cooked tomatoes	.....	2 3/4 quarts
Red chili peppers	.....	2
Salt	.....	3 1/3 tablespoons
Peanut flour	4 1/2 ounces	.....

Wash the beans. Put beans in a large pot with water.

Bring to a boil; boil 2 minutes. Remove from heat and let soak 1 hour.

Cook beans for 1 hour.

Cook onion, carrots, and celery in the oil until onions are clear, but not brown. Combine all ingredients except peanut flour and cook slowly until beans are tender.

Remove from heat and stir in peanut flour.

About 6.7 grams protein and 158 calories per serving.

Peanut Beverage

(Peanut flour)

Yield: 50 servings, about 1 cup each

Ingredient	Weight	Volume
Water	.....	3 gallons
Tapioca or cassava flour	3 ounces	2/3 cup
Salt	.....	2 tablespoons
Sugar	10 1/2 ounces	1 1/2 cups
Peanut flour	2 pounds	.....

Combine the water, tapioca or cassava flour, and salt in a large pot.

Boil for 10 minutes. Remove from heat. Mix sugar and peanut flour together and stir into the water mixture. Beat to mix well.

About 11 grams protein and 120 calories per serving.

Sweetpotato Puree

(Peanut flour)

Yield: 50 servings, about 1/3 cup each

Ingredient	Weight	Volume
Cooked, strained sweetpotatoes	3 pounds 6 ounces	1 1/2 quarts
Safe water	.....	2 quarts
Sugar	1 3/4 ounces	1/4 cup
Salt	.....	1 1/2 teaspoons
Peanut flour	12 ounces	.....

Combine all ingredients and beat to blend.

About 3.8 grams protein and 65 calories per serving.

Vegetable Soup (Peanut flour)

Yield: 50 servings, 1 cup each

Ingredient	Weight	Volume
Cooking fat or oil	8 ounces	1 cup
Chopped onion	1 pound	2 2/3 cups
Salt	.....	3 1/3 tablespoons
Pepper	.....	1 1/2 teaspoons
Water	.....	3 1/2 quarts
Cooked tomatoes	.....	1 1/4 gallons
Chopped potatoes	6 pounds	3 1/2 quarts
Chopped green peppers or local vegetable	1 pound	3 cups
Sugar	1 ounce	2 tablespoons
Peanut flour	10 ounces	.....

In a large pot, cook onions in the fat or oil until onions are clear, but not brown. Add all ingredients except the peanut flour and cook slowly until vegetables are done. Remove from heat and stir in the peanut flour.

About 5.0 grams protein and 130 calories per serving.

Main Dishes

Bean Cakes (Peanut flour)

Yield: 50 servings, 1 cake each, about 2 3/4-inch diameter

Ingredient	Weight	Volume
Dry beans	3 pounds	.....
Water	.....	1 gallon
Cooking fat or oil	2 ounces	1/4 cup
Chopped onion	12 ounces	2 cups
Chopped green pepper	12 ounces	2 1/4 cups
Cooked tomatoes	.....	2 1/2 cups
Salt	.....	2 1/3 tablespoons
Peanut flour	8 ounces	.....

Wash beans. Soak overnight in the water; in morning cook until tender, about 2 hours. Drain.

Place oil in a pot, add onion and green pepper, cook until onion is clear.

Combine drained beans, tomatoes, and peanut flour with the onion mixture.

If mixture is too dry, add a little of the bean liquid.

Shape into cakes. Fry in a small amount of cooking fat until brown on one side, turn to brown other side.

About 8.5 grams protein and 124 calories per serving.

Bean Curry (Peanut flour)

Yield: 50 servings, 1 cup each

Ingredient	Weight	Volume
Garbanzo beans	7 pounds	1 1/2 gallons
Water	.....	3 gallons
Salt	2 ounces	1/4 cup
Cooking fat or oil	1 pound 8 ounces	3 cups
Chopped onion	2 pounds	1 quart 1 1/3 cups
Curry powder	2 ounces	1/2 cup
Peanut flour	1 pound 4 ounces	.....

Wash the beans. Put beans in a large pot with water and salt. Bring to a boil, boil 2 minutes. Remove from heat and let soak 1 hour.

Cook beans until tender.

Lightly brown onion in the fat.

Add onion mixture, curry powder, and peanut flour to the beans.

About 18.7 grams protein and 398 calories per serving.

Beans and Rice (Peanut flour)

Yield: 50 servings, 1 cup each

Ingredient	Weight	Volume
Dry beans	4 pounds 8 ounces	.....
Water	.....	2 1/2 gallons
Salt	2 3/4 ounces	1/3 cup
Pepper	.....	1 teaspoon
Thyme	.....	1/2 teaspoon
Cooking oil	12 ounces	1 1/2 cups
Chopped onion	1 pound 2 ounces	3 cups
Rice	1 pound 5 ounces	3 cups
Tomato paste	1 pound 12 ounces	3 cups
Peanut flour	4 ounces	.....

Wash beans. Put beans in a large pot with water and salt. Bring to a boil, boil 2 minutes. Remove from heat and let soak 1 hour.

Cook beans until tender.

Lightly brown onion in the fat.

Combine all ingredients except the flour. Simmer for 30 minutes.

Remove from heat and stir in peanut flour.

About 11.3 grams protein and 267 calories per serving.

Bean Stew

(Peanut flour)

Yield: 50 servings, 1 cup each

Ingredient	Weight	Volume
Dry beans	5 pounds 4 ounces	.....
Water	.....	2 gallons
Salt	.....	2 1/2 tablespoons
Cooking fat or oil	1 pound	.....
Chopped onion	1 pound 8 ounces	1 quart
Cooked tomatoes	.....	3 quarts
Peanut flour	1 pound	.....

Wash the beans. Put beans in a large pot with water and salt. Bring to a boil, boil 2 minutes. Remove from heat and let soak 1 hour. Cook beans until tender.

Lightly brown onion in the fat.

Combine all ingredients except the flour. Simmer for 30 minutes.

Remove from heat and stir in peanut flour.

About 15.7 grams protein and 293 calories per serving.

Rice-Spinach

(Peanut flour)

Yield: 50 servings, 1 cup each

Ingredient	Weight	Volume
Rice	4 pounds	2 1/4 quarts
Cooking oil	1 pound 8 ounces	3 cups
Chopped onion	1 pound	2 1/2 cups
Boiling water	.....	1 1/4 gallons
Salt	2 3/4 ounces	1/3 cup
Chopped fresh spinach or other tender greens	10 pounds	.....
Peanut flour	12 ounces	.....

In a large pot cook the rice in oil, stirring constantly, until rice is lightly browned. Add onions and cook until onions are clear.

Add boiling water and salt to the rice mixture, cover and cook 20 minutes.

Stir in spinach or other greens. Cover and cook 15 minutes longer, stirring occasionally.

Remove from heat. Add peanut flour, mix well, and serve.

Note: Rice-spinach is more attractive cooked in 25-serving lots unless a very large cooking pot is available for 50 servings.

About 6.4 grams protein and 285 calories per serving.

Breads

Biscuits, High-Fat

(Peanut flour)

Yield: 50 servings, 2 biscuits each, 2-inch diameter

Ingredient	Weight	Volume
Wheat flour	3 pounds	3 quarts
Peanut flour	4 ounces	.....
Salt	1 ounce	2 tablespoons
Nonfat dry milk	8 ounces	.....
Baking powder	2 ounces	1/3 cup
Cooking fat	1 pound 5 ounces	3 cups
Water	.....	About 5 1/3 cups

Sift dry ingredients together. Blend in fat.

Add water to make a soft dough. Turn out on a floured board and knead for 1 minute.

Roll out dough and cut in squares.

Bake in a hot oven about 15 minutes or until golden brown.

Note: If preferred, dough may be dropped by spoonfuls onto a greased baking sheet.

About 5.6 grams protein and 230 calories per serving (2 biscuits).

Biscuits, Low-Fat (Peanut flour)

Yield: 50 servings, 2 biscuits each, 2-inch diameter

Ingredient	Weight	Volume
Wheat flour	3 pounds	3 quarts
Peanut flour	4 ounces	.....
Salt	1 ounce	2 tablespoons
Nonfat dry milk	8 ounces	.....
Baking powder	2 ounces	1/3 cup
Cooking fat	12 ounces	1 3/4 cups
Water	.....	About 5 1/3 cups

Sift dry ingredients together. Blend in fat.

Add water to make a soft dough. Turn out on a floured board and knead for 1 minute.

Roll out dough and cut in squares.

Bake in a hot oven about 15 minutes or until golden brown.

Note: If preferred, dough may be dropped by spoonfuls onto a greased baking sheet.

About 5.6 grams protein and 185 calories per serving (2 biscuits).

Chapati (Peanut flour)

Yield: 50 servings, 1 chapati each, 7-inch diameter

Ingredient	Weight	Volume
Atta or	3 pounds or	.....
Whole wheat flour	3 pounds	2 1/2 quarts
Peanut flour	1 pound	.....
Salt	.....	1 1/3 tablespoons
Cooking oil	8 ounces	1 cup
Water	.....	About 1 1/4 quarts

Combine all ingredients. Mix well. Knead for 5 minutes. Divide dough into 50 balls.

Roll out each ball into a circle about 7 inches in diameter.

Cook on a hot griddle, turning frequently. Cook about 1 minute.

Hold over high heat to puff chapati.

Note: If a crisp bread is desired, chapati may be baked in a moderate oven for 10 minutes.

About 5.7 grams protein and 123 calories per serving.

Cornbread (Peanut flour)

Yield: 50 servings, 1 piece each

Ingredient	Weight	Volume
Cornmeal	1 pound 10 ounces	1 1/4 quarts
Wheat flour	1 pound	1 quart
Peanut flour	10 ounces	.....
Sugar	7 ounces	1 cup
Salt	1 ounce	2 tablespoons
Baking powder	3 ounces	1/2 cup
Water	.....	1 1/2 quarts
Melted cooking fat or oil	4 ounces	1/2 cup
Eggs, beaten	8 1/2 ounces	1 cup (5 eggs)

Mix cornmeal, flours, sugar, salt, and baking powder together.

Add water, fat, and eggs. Stir only enough to moisten dry ingredients.

Pour into greased pans and bake in a hot oven about 40 minutes or until golden brown on top.

About 5.7 grams protein and 152 calories per serving.

Cornmeal Pancakes

This cornbread batter may be dropped by spoonfuls onto a hot greased griddle. Cook slowly until the surface is covered with bubbles, turn, and cook until the bottom is well browned.

Cornbread Without Egg (Peanut flour)

Yield: 50 servings, 1 piece each

Ingredient	Weight	Volume
Cornmeal	2 pounds 10 ounces	2 quarts
Wheat flour	1 pound 8 ounces	1 1/2 quarts
Peanut flour	1 pound	.....
Sugar	1 pound	2 1/4 cups
Baking powder	5 1/4 ounces	1 cup less 2 tablespoons
Salt	1 ounce	2 tablespoons
Water	.....	2 1/2 quarts
Melted cooking fat or oil	1 pound	2 cups

Combine all ingredients in a mixing bowl. Stir to mix.
Pour mixture into a large greased baking pan.
Bake in a hot oven 40 minutes or until golden brown.

About 8 grams protein and 288 calories per serving.

Tortillas (Peanut flour)

Yield: 50 servings, 1 tortilla each

Ingredient	Weight	Volume
Boiling water	.....	2 1/2 quarts
Cornmeal	2 pounds 10 ounces	2 quarts
Peanut flour	6 ounces	.....
Salt	2 ounces	1/4 cup
Cooking oil	8 ounces	1 cup

Stir water into cornmeal and peanut flour. Add salt and oil and cook until thickened.

Shape about 2 tablespoons of the mixture into a round ball.

Press out flat.

Cook tortillas on a lightly greased griddle, frying pan, or clean thick sheet of metal. Turn tortillas before they brown.

Note: If a crisp bread is desired, tortillas may be baked in a moderate oven for 20 minutes.

About 3.8 grams protein and 136 calories per serving.

Yeast Bread (10% peanut flour)

Yield: 5 loaves, cut into 10 slices

Ingredient	Weight	Volume
Active dry yeast	1 ounce	3 tablespoons
Lukewarm water	.....	1 quart
Wheat flour	2 pounds 8 ounces	2 1/2 quarts
Peanut flour	10 ounces	.....
Sugar	4 ounces	1/2 cup
Salt	1 ounce	2 tablespoons
Melted cooking fat or oil	4 ounces	1/2 cup

Dissolve yeast in the lukewarm water.

Add half the wheat flour, peanut flour, sugar, and salt to water and yeast.

Stir in the fat or oil and beat until the mixture is smooth.

Add remaining flour and knead on floured board until dough is smooth and elastic (about 12 minutes).

Form dough into a smooth ball.

Place in a greased bowl and turn dough to grease top.

Cover and let rise in a warm place until dough has increased 2 to 3 times in size.

Punch down and shape into loaves and put in greased pan.

Let loaves of bread rise in a warm place until double in size.

Bake in a hot oven about 35 minutes.

About 5.3 grams protein and 134 calories per serving (1 slice).

Yeast Bread (4% peanut flour)

Yield: 5 loaves, cut into 10 slices

Ingredient	Weight	Volume
Active dry yeast	1 ounce	3 tablespoons
Lukewarm water	.....	1 quart
Wheat flour	3 pounds	3 quarts
Peanut flour	4 ounces	.....
Sugar	4 ounces	1/2 cup
Salt	1 ounce	2 tablespoons
Melted cooking fat or oil	4 ounces	1/2 cup

Dissolve yeast in the lukewarm water.

Add half the wheat flour, peanut flour, sugar, and salt to water and yeast.

Stir in the fat or oil and beat until the mixture is smooth.

Add remaining flour and knead on floured board until dough is smooth and elastic (about 12 minutes).

Form dough into a smooth ball.

Place in a greased bowl and turn dough to grease top.

Cover and let rise in a warm place until dough has increased 2 to 3 times in size. Punch down and shape into loaves and put in greased pan.

Let loaves of bread rise in a warm place until double in size.

Bake in a hot oven about 35 minutes.

About 4.2 grams protein and 138 calories per serving (1 slice).

Fried Bread

Follow directions given in bread recipe through first rising.

Punch dough down. Pinch off 200 small rolls.

Fry rolls in hot fat until brown on one side, turn to brown other side.

Remove from fat. Drain.

If desired, roll fried bread in sugar.

Portion: 2 pieces each.

Cereal Products

Cornmeal Porridge (Peanut flour)

Yield: About 50 servings, 1/2 cup each

Ingredient	Weight	Volume
Cornmeal	1 pound 8 ounces	4 1/2 cups
Salt	.....	2 teaspoons
Water	.....	1 3/4 gallons
Peanut flour	10 ounces	.....

Combine cornmeal and salt with 3/4 gallon water.

Bring the remaining 1 gallon water to a boil and stir in the cornmeal mixture.

Cook 15 minutes or until thickened, stirring occasionally.

Stir in peanut flour before serving.

About 4.0 grams protein and 69 calories per serving.

Cornmeal Squares (Peanut flour)

Yield: 50 servings, 1 piece each, about 2-inch square

Ingredient	Weight	Volume
Water	.....	2 quarts
Cornmeal	1 pound 10 ounces	1 1/4 quarts
Salt	.....	2 teaspoons
Chili powder, or local seasonings	.....	2 1/2 teaspoons
Paprika, or local seasonings	.....	1 teaspoon
Boiling water or broth	.....	1 gallon
Peanut flour	10 ounces	.....

Mix water, cornmeal, salt, and seasonings.

Stir cornmeal mixture into boiling water or broth.

Cover and cook 20 minutes, stirring occasionally.

Pour mixture into a pan. Let stand until firm. Cut and fry in fat until brown on both sides.

About 4.1 grams protein and 73 calories per serving.

Cooked Rice (Peanut flour)

Yield: 50 servings, about 1/2 cup each

Ingredient	Weight	Volume
Hot broth, water, or milk	.....	1 1/2 gallons
Rice	1 pound 10 ounces	3 3/4 cups
Salt	1 1/2 ounces	3 tablespoons
Peanut flour	12 ounces	.....

Heat broth, water, or milk in a large heavy pot; add rice and salt.

Cover and cook over low heat 30 minutes.

Remove from heat, let stand 5 minutes. Stir in peanut flour and serve.

Note: If desired, ground crayfish, fish, or red chili pepper may be added to the rice mixture.

About 4.4 grams protein and 80 calories per serving.

Noodles (Peanut flour)

Yield: 50 servings, 1 cup each

Ingredient	Weight	Volume
Wheat flour	2 pounds 4 ounces	2 1/4 quarts
Peanut flour	10 ounces	.....
Salt	.....	1 tablespoon
Eggs, beaten	.....	7
Water	.....	2 1/2 cups

Combine all ingredients in a bowl. Stir to mix thoroughly.

Pinch off small pieces of dough and roll very thin on a well-floured board. Cut into strips or squares. Let dry on a clean surface.

To cook noodles: Add 1/4 cup salt to 1 3/4 gallons chicken or fish broth or water. Bring to a boil; add noodles. Cover and cook over low heat 15 minutes.

About 5.7 grams protein and 106 calories per serving.

Desserts

Cinnamon Sugar Cookies (Peanut flour)

Yield: 50 servings, 2 cookies each, 2 1/2-inch diameter

Ingredient	Weight	Volume
Sugar	1 pound 12 ounces	1 quart
Cooking fat	1 pound	2 1/4 cups
Wheat flour	1 pound 4 ounces	1 1/4 quarts
Peanut flour	12 ounces	.....
Baking powder	1 1/2 ounces	3 tablespoons
Cinnamon	1/2 ounce	2 tablespoons
Salt	.....	2 teaspoons
Water	.....	1 1/2 cups

Mix sugar and fat until well blended. Combine the dry ingredients; stir to mix.

Add water and dry ingredients to the sugar mixture; mix well.

Drop dough by spoonfuls, 1 inch apart, onto a greased baking pan.

Press cookies with fork or the bottom of a small container.

Bake in a moderate oven about 15 minutes or until golden brown.

About 4.5 grams protein and 209 calories per serving (2 cookies).

Peanut Cookies (Peanut flour)

Yield: 50 servings, 2 cookies each, 2 1/2-inch diameter

Ingredient	Weight	Volume
Sugar	1 pound	2 1/4 cups
Cooking fat	1 pound	2 1/4 cups
Water	.....	1 1/2 cups
Vanilla	.....	1 tablespoon
Salt	.....	1 tablespoon
Wheat flour	1 pound	1 quart
Peanut flour	8 ounces	.....
Baking powder	3/4 ounce	2 tablespoons
Chopped peanuts	8 ounces	1 3/4 cups

Stir sugar and fat until well mixed.

Add remaining ingredients, stir to mix.

Drop dough by spoonfuls, 1 inch apart onto a greased baking pan.

Press cookies with a fork or the bottom of a small container.

Bake in a moderate oven about 15 minutes or until golden brown.

About 4.3 grams protein and 192 calories per serving (2 cookies).

Puff-Puff Doughnut Balls

(Peanut flour)

Yield: 50 servings, 2 balls each, about 1 3/4-inch diameter

Ingredient	Weight	Volume
Wheat flour	2 pounds 8 ounces	2 1/2 quarts
Peanut flour	8 ounces	.....
Sugar	7 ounces	1 cup
Nutmeg	.....	2 teaspoons
Salt	.....	2 teaspoons
Baking powder	1 1/2 ounces	1/4 cup
Eggs, beaten	.....	6
Water	.....	1 quart

Mix flours, sugar, nutmeg, salt, and baking powder. Add eggs and water. Stir only enough to moisten dry ingredients.

Drop by spoonfuls into hot fat and fry until brown on one side, turn to brown other side. Remove from fat. Drain.

If desired, roll puff-puffs in sugar.

About 5.3 grams protein and 125 calories per serving (2 balls).

Rice Jelly

(Peanut flour)

Yield: About 50 servings, 1/2 cup each

Ingredient	Weight	Volume
Rice flour	1 pound	2 3/4 cups
Cold water	.....	2 1/2 cups
Boiling water	.....	1 1/4 gallons
Salt	.....	2 1/2 teaspoons
Sugar	5 ounces	3/4 cup
Peanut flour	1 pound 4 ounces	.....
*Grated orange rind	.....	2 1/2 teaspoons
*Orange juice	.....	2 1/2 cups

Mix rice flour with the cold water to make a thin paste. Stir into the boiling water.

Add salt and sugar and boil until the mixture is transparent, about 10 minutes.

Remove from heat, stir in peanut flour, orange rind, and orange juice.

About 6.2 grams protein and 92 calories per serving.

*Lemon or other desired flavoring may be used.

QUANTITY RECIPES FOR SOY FLOUR

Beverages and Soups

Bean Soup

(Soy flour)

Yield: 50 servings, 1 cup each

Ingredient	Weight	Volume
White beans or other dry beans	2 pounds 10 ounces	1 1/2 quarts
Water	.....	2 gallons
Cooking oil	10 ounces	1 1/4 cups
Chopped onions	8 ounces	1 1/3 cups
Chopped carrots	12 ounces	2 1/4 cups
Chopped celery or local vegetable	8 ounces	2 cups
Cooked tomatoes	.....	2 3/4 quarts

Ingredient	Weight	Volume
Red chili peppers	.....	2
Salt	.....	3 1/3 tablespoons
Soy flour	4 1/2 ounces	.....

Wash the beans. Put beans in a large pot with water. Bring to a boil, boil 2 minutes. Remove from heat and let soak 1 hour.

Cook beans for 1 hour.

Cook onion, carrots, and celery in the oil until onions are clear, but not brown.

Combine all ingredients except soy flour and cook slowly until beans are tender.

Remove from heat and stir in soy flour.

About 7.5 grams protein and 160 calories per serving.

Soy Beverage (Soy flour)

Yield: 50 servings, about 1 cup each

Ingredient	Weight	Volume
Water	.....	3 gallons
Tapioca or cassava flour	3 ounces	2/3 cup
Salt	.....	2 tablespoons
Sugar	10 1/2 ounces	1 1/2 cups
Soy flour	2 pounds	.....

Combine the water, tapioca or cassava flour, and salt in a large pot.

Boil for 10 minutes. Remove from heat. Mix sugar and soy flour and stir into the water mixture. Beat to mix well.

About 8.3 grams protein and 111 calories per serving.

Sweetpotato Puree (Soy flour)

Yield: 50 servings, about 1/3 cup each

Ingredient	Weight	Volume
Cooked, strained sweetpotatoes	3 pounds 6 ounces	1 1/2 quarts
Water	.....	2 quarts
Sugar	1 3/4 ounces	1/4 cup
Salt	.....	1 1/2 teaspoons
Soy flour	12 ounces	.....

Combine all ingredients and beat to blend.

About 3.0 grams protein and 68 calories per serving.

Vegetable Soup (Soy flour)

Yield: 50 servings, 1 cup each

Ingredient	Weight	Volume
Cooking fat or oil	8 ounces	1 cup
Chopped onion	1 pound	2 2/3 cups
Salt	.....	3 1/3 tablespoons

Ingredient	Weight	Volume
Pepper	.....	1 1/2 teaspoons
Water	.....	3 1/2 quarts
Cooked tomatoes	.....	1 1/4 gallons
Chopped potatoes	6 pounds	3 1/2 quarts
Chopped green peppers or local vegetable	1 pound	3 cups
Sugar	1 ounce	2 tablespoons
Soy flour	10 ounces	.....

In a large pot, cook onions in the fat or oil until onions are clear, but not brown. Add all ingredients except the soy flour and cook slowly until vegetables are done. Remove from heat and stir in the soy flour.

About 4.4 grams protein and 133 calories per serving.

Main Dishes

Bean Cakes (Soy flour)

Yield: 50 servings, 1 cake each, about 2 3/4-inch diameter

Ingredient	Weight	Volume
Dry beans	3 pounds	.....
Water	.....	1 gallon
Cooking fat or oil	2 ounces	1/4 cup
Chopped onion	12 ounces	2 cups
Chopped green pepper	12 ounces	2 1/4 cups
Cooked tomatoes	.....	2 1/2 cups
Salt	.....	2 1/3 tablespoons
Soy flour	8 ounces	.....

Wash beans. Soak overnight in the water; in morning cook until tender, about 2 hours. Drain.

Place oil in a pot, add onion and green pepper, cook until onion is clear.

Combine drained beans, tomatoes, and soy flour with the onion mixture.

If mixture is too dry, add a little of the bean liquid.

Shape into cakes. Fry in a small amount of cooking fat until brown on one side, turn to brown other side.

About 8.0 grams protein and 126 calories per serving.

Bean Curry (Soy flour)

Yield: 50 servings, 1 cup each

Ingredient	Weight	Volume
Garbanzo beans	7 pounds	1 1/2 gallons
Water	.....	3 gallons
Salt	2 ounces	1/4 cup
Cooking fat or oil	1 pound 8 ounces	3 cups
Chopped onion	2 pounds	1 quart 1 1/3 cups
Curry powder	2 ounces	1/2 cup
Soy flour	1 pound 4 ounces	.....

Wash the beans. Put beans in a large pot with water and salt. Bring to a boil, boil 2 minutes. Remove from heat and let soak 1 hour.

Cook beans until tender.

Lightly brown onion in the fat.

Add onion mixture, curry powder, and soy flour to the beans.

About 17.5 grams protein and 404 calories per serving.

Beans and Rice (Soy flour)

Yield: 50 servings, 1 cup each

Ingredient	Weight	Volume
Dry beans	4 pounds 8 ounces	.....
Water	.....	2 1/2 gallons
Salt	2 3/4 ounces	1/3 cup
Pepper	.....	1 teaspoon
Thyme	.....	1/2 teaspoon
Cooking oil	12 ounces	1 1/2 cups
Chopped onion	1 pound 2 ounces	3 cups
Rice	1 pound 5 ounces	3 cups
Tomato paste	1 pound 12 ounces	3 cups
Soy flour	4 ounces	.....

Wash beans. Put beans in a large pot with water and salt. Bring to a boil, boil 2 minutes. Remove from heat and let soak 1 hour.

Cook beans until tender.

Lightly brown onion in the fat.

Combine all ingredients except the flour. Simmer for 30 minutes.

Remove from heat and stir in soy flour.

About 11.1 grams protein and 269 calories per serving.

Bean Stew (Soy flour)

Yield: 50 servings, 1 cup each

Ingredient	Weight	Volume
Dry beans	5 pounds 4 ounces	.....
Water	.....	2 gallons
Salt	.....	2 1/2 tablespoons
Cooking fat or oil	1 pound	.....
Chopped onion	1 pound 8 ounces	1 quart
Cooked tomatoes	.....	3 quarts
Soy flour	1 pound	.....

Wash the beans. Put beans in a large pot with water and salt. Bring to a boil, boil 2 minutes. Remove from heat and let soak 1 hour.

Cook beans until tender. Lightly brown onion in the fat.

Combine all ingredients except the flour. Simmer for 30 minutes.

Remove from heat and stir in soy flour.

About 14.7 grams protein and 298 calories per serving.

Creole Eggplant (Soy flour)

Yield: 50 servings, 1/2 cup each

Ingredient	Weight	Volume
Eggplant, cut in cubes	5 pounds	.....
Onions, chopped	10 ounces	2 cups
Fat or oil	8 ounces	1 cup
Cooked tomatoes	11 pounds	3 1/4 quarts
Green peppers	8 ounces	1 cup
Salt	1 ounce	2 tablespoons
Brown sugar	2 1/2 ounces	1/3 cup, packed
Soy flour	12 ounces	.....

Cook onions in fat or oil until clear.

Combine all ingredients except soy flour and cook until eggplant is tender.

Remove from heat. Stir in soy flour.

About 3.8 grams protein and 94 calories per serving.

Rice-Spinach (Soy flour)

Yield: 50 servings, 1 cup each

Ingredient	Weight	Volume
Rice	4 pounds	2 1/4 quarts
Cooking oil	1 pound 8 ounces	3 cups
Chopped onion	1 pound	2 1/2 cups
Boiling water	.....	1 1/4 gallons
Salt	2 3/4 ounces	1/3 cup
Chopped fresh spinach or other tender greens	10 pounds	.....
Soy flour	12 ounces	.....

In a large pot cook the rice in oil, stirring constantly, until rice is lightly browned. Add onions and cook until onions are clear.

Add boiling water and salt to the rice mixture, cover, and cook 20 minutes.

Stir in spinach or other greens. Cover and cook 15 minutes longer, stirring occasionally.

Remove from heat. Add soy flour, mix well, and serve.

Note: Rice-spinach is more attractive cooked in 25-serving lots unless a very large cooking pot is available for 50 servings.

About 5.6 grams protein and 289 calories per serving.

Breads

Biscuits, High-Fat (Soy flour)

Yield: 50 servings, 2 biscuits each, 2-inch diameter

Ingredient	Weight	Volume
Wheat flour	3 pounds	3 quarts
Soy flour	4 ounces	.....
Salt	1 ounce	2 tablespoons
Nonfat dry milk	8 ounces	.....
Baking powder	2 ounces	1/3 cup
Cooking fat	1 pound 5 ounces	3 cups
Water	.....	About 5 1/3 cups

Sift dry ingredients together. Blend in fat.

Add water to make a soft dough. Turn out on a floured board and knead for 1 minute.

Roll out dough and cut in squares.

Bake in a hot oven about 15 minutes or until golden brown.

Note: If preferred, dough may be dropped by spoonfuls onto a greased baking sheet.

About 5.3 grams protein and 231 calories per serving (2 biscuits).

Biscuits, Low-Fat (Soy flour)

Yield: 50 servings, 2 biscuits each, 2-inch diameter

Ingredient	Weight	Volume
Wheat flour	3 pounds	3 quarts
Soy flour	4 ounces	.....
Salt	1 ounce	2 tablespoons
Nonfat dry milk	8 ounces	.....
Baking powder	2 ounces	1/3 cup
Cooking fat	12 ounces	1 3/4 cup
Water	.....	About 5 1/3 cups

Sift dry ingredients together. Blend in fat.

Add water to make a soft dough. Turn out on a floured board and knead for 1 minute.

Roll out dough and cut in squares.

Bake in a hot oven about 15 minutes or until golden brown.

Note: If preferred, dough may be dropped by spoonfuls onto a greased baking sheet.

About 5.3 grams protein and 187 calories per serving (2 biscuits).

Chapati
(Soy flour)

Yield: 50 servings, 1 chapati each, 7-inch diameter

Ingredient	Weight	Volume
Atta or Whole wheat flour	3 pounds	2 1/2 quarts
Soy flour	1 pound	.....
Salt	.....	1 1/3 tablespoons
Cooking oil	8 ounces	1 cup
Water	.....	About 1 1/4 quarts

Combine all ingredients. Mix well. Knead for 5 minutes. Divide dough into 50 balls. Roll out each ball into a circle about 7 inches in diameter. Cook on a hot griddle, turning frequently. Cook about 1 minute. Hold over high heat to puff chapati.

Note: If a crisp bread is desired, chapati may be baked in a moderate oven for 10 minutes.

About 5.1 grams protein and 124 calories per serving.

Cornbread
(Soy flour)

Yield: 50 servings, 1 piece each

Ingredient	Weight	Volume
Cornmeal	1 pound 10 ounces	1 1/4 quarts
Wheat flour	1 pound	1 quart
Soy flour	10 ounces	.....
Sugar	7 ounces	1 cup
Salt	1 ounce	2 tablespoons
Baking powder	3 ounces	1/2 cup
Water	.....	1 1/2 quarts
Melted cooking fat or oil	4 ounces	1/2 cup
Eggs, beaten	8 1/2 ounces	1 cup (5 eggs)

Mix cornmeal, flours, sugar, salt, and baking powder. Add water, fat, and eggs. Stir only enough to moisten dry ingredients. Pour into greased pans and bake in a hot oven about 40 minutes or until golden brown on top.

About 5.0 grams protein and 142 calories per serving.

Cornmeal Pancakes

This cornbread batter may be dropped by spoonfuls onto a hot greased griddle. Cook slowly until the surface is covered with bubbles, turn, and cook until the bottom is well browned.

Cornbread Without Egg
(Soy flour)

Yield: 50 servings, 1 piece each

Ingredient	Weight	Volume
Cornmeal	2 pounds 10 ounces	2 quarts
Wheat flour	1 pound 8 ounces	1 1/2 quarts
Soy flour	1 pound	.....
Sugar	1 pound	2 1/4 cups
Baking powder	5 1/4 ounces	1 cup less 2 tablespoons
Salt	1 ounce	2 tablespoons
Water	.....	2 1/2 quarts
Melted cooking fat or oil	1 pound	2 cups

Combine all ingredients in a mixing bowl. Stir to mix. Pour mixture into a large greased baking pan. Bake in a hot oven 40 minutes or until golden brown.

About 7.0 grams protein and 238 calories per serving.

Tortillas (Soy flour)

Yield: 50 servings, 1 tortilla each

Ingredient	Weight	Volume
Boiling water	.....	2 1/2 quarts
Cornmeal	2 pounds 10 ounces	2 quarts
Soy flour	6 ounces	.....
Salt	2 ounces	1/4 cup
Cooking oil	8 ounces	1 cup

Stir water into cornmeal and soy flour. Add salt and oil and cook until thickened.

Shape about 2 tablespoons of the mixture into a round ball. Press out flat.

Cook tortillas on a lightly greased griddle, frying pan, or clean thick sheet of metal. Turn tortillas before they brown.

Note: If a crisp bread is desired, tortillas may be baked in a moderate oven for 20 minutes.

About 3.4 grams protein and 139 calories per serving.

Yeast Bread (11% soy flour)

Yield: 5 loaves, cut into 10 slices

Ingredient	Weight	Volume
Active dry yeast	1 ounce	3 tablespoons
Lukewarm water	.....	1 quart
Wheat flour	2 pounds 8 ounces	2 1/2 quarts
Soy flour	10 ounces	.....
Sugar	4 ounces	1/2 cup
Salt	1 ounce	2 tablespoons
Melted cooking fat or oil	4 ounces	1/2 cup

Dissolve yeast in the lukewarm water.

Add half the wheat flour, soy flour, sugar, and salt to water and yeast.

Stir in the fat or oil and beat until the mixture is smooth.

Add remaining flour and knead on floured board until dough is smooth and elastic (about 12 minutes).

Form dough into a smooth ball.

Place in a greased bowl and turn dough to grease top.

Cover and let rise in a warm place until dough has increased 2 to 3 times in size.

Punch down and shape into loaves and put in greased pan.

Let loaves of bread rise in a warm place until double in size.

Bake in a hot oven about 35 minutes.

About 4.7 grams protein and 137 calories per serving (1 slice).

Yeast Bread (4% soy flour)

Yield: 5 loaves, cut into 10 slices

Ingredient	Weight	Volume
Active dry yeast	1 ounce	3 tablespoons
Lukewarm water	.....	1 quart
Wheat flour	3 pounds	3 quarts
Soy flour	4 ounces	.....
Sugar	4 ounces	1/2 cup
Salt	1 ounce	2 tablespoons
Melted cooking fat or oil	4 ounces	1/2 cup

Dissolve yeast in the lukewarm water.

Add half the wheat flour, soy flour, sugar, and salt to water and yeast.

Stir in the fat or oil and beat until the mixture is smooth.

Add remaining flour and knead on floured board until dough is smooth and elastic (about 12 minutes).

Form dough into a smooth ball.

Place in a greased bowl and turn to grease top.

Cover and let rise in a warm place until dough has increased 2 to 3 times in size.

Punch down and shape into loaves and put in greased pan.

Let loaves of bread rise in a warm place until double in size.

Bake in a hot oven about 35 minutes.

About 3.9 grams protein and 139 calories per serving (1 slice).

Fried Bread

Follow directions given in bread recipe through first rising.

Punch dough down. Pinch off 200 small rolls.

Fry rolls in hot fat until brown on one side, turn to brown other side. Remove from fat. Drain.

If desired, roll fried bread in sugar.

Portion: 2 pieces each

Cereal Products

Cornmeal Porridge (Soy flour)

Yield: About 50 servings, 1/2 cup each

Ingredient	Weight	Volume
Cornmeal	1 pound 8 ounces	4 1/2 cups
Salt	.....	2 teaspoons
Water	.....	1 3/4 gallons
Soy flour	10 ounces	.....

Combine cornmeal and salt with 3/4 gallon water. Bring the remaining 1 gallon water to a boil and stir in the cornmeal mixture. Cook 15 minutes or until thickened, stirring occasionally. Stir in soy flour before serving.

About 3.3 grams protein and 72 calories per serving.

Cornmeal Squares (Soy flour)

Yield: 50 servings, 1 piece each, about 2-inch square

Ingredient	Weight	Volume
Water	.....	2 quarts
Cornmeal	1 pound 10 ounces	1 1/4 quarts
Salt	.....	2 teaspoons
Chili powder or local seasonings	.....	2 1/2 teaspoons
Paprika or local seasonings	.....	1 teaspoon
Boiling water or broth	.....	1 gallon
Soy flour	10 ounces	.....

Mix water, cornmeal, salt, and seasonings. Stir cornmeal mixture into boiling water or broth. Cover and cook 20 minutes, stirring occasionally. Pour mixture into a pan. Let stand until firm. Cut and fry in fat until brown on both sides.

About 3.4 grams protein and 76 calories per serving.

Cooked Rice (Soy flour)

Yield: 50 servings, about 1/2 cup each

Ingredient	Weight	Volume
Hot broth, water, or milk	.....	1 1/2 gallons
Rice	1 pound 10 ounces	3 3/4 cups
Salt	1 1/2 ounces	3 tablespoons
Soy flour	12 ounces	.....

Heat broth, water, or milk in a large heavy pot; add rice and salt. Cover and cook over low heat 30 minutes. Remove from heat, let stand 5 minutes. Stir in soy flour and serve.

Note: If desired, ground crayfish, fish, or red chili pepper may be added to the rice mixture.

About 3.6 grams protein and 83 calories per serving.

Noodles (Soy flour)

Yield: 50 servings, 1 cup each

Ingredient	Weight	Volume
Wheat flour	2 pounds 4 ounces	2 1/4 quarts
Soy flour	10 ounces	3 cups
Salt	.....	1 tablespoon
Eggs, beaten	.....	7
Water	.....	2 1/2 cups

Combine all ingredients in a bowl. Stir to mix thoroughly. Pinch off small pieces of dough and roll very thin on a well-floured board. Cut into strips or squares. Let dry on a clean surface.

To cook noodles: Add 1/4 cup salt to 1 3/4 gallons chicken or fish broth or water. Bring to a boil; add noodles. Cover and cook over low heat 15 minutes.

About 5.1 grams protein and 109 calories per serving.

Seasoned Rice (Soy flour)

Yield: 50 servings, 1 cup each

Ingredient	Weight	Volume
Rice	4 pounds	2 1/4 quarts
Cooking oil	1 pound 2 ounces	2 1/4 cups
Chopped onion	1 pound 4 ounces	4 cups
Salt	4 ounces	1/2 cup
Pepper	.....	1/2 teaspoon
Soy sauce	.....	1/2 cup
Boiling water	.....	3 gallons
Soy flour	1 pound	.....

Cook rice in oil until lightly browned, stirring constantly.

Add onion and cook until onion is clear.

Stir salt, pepper, soy sauce, and water into the rice mixture.

Cover and cook 20 minutes. Remove from heat, add soy flour, and stir to mix.

About 6.1 grams protein and 266 calories per serving.

Desserts

Cinnamon Sugar Cookies (Soy flour)

Yield: 50 servings, 2 cookies each, 2 1/2-inch diameter

Ingredient	Weight	Volume
Sugar	1 pound 12 ounces	1 quart
Cooking fat	1 pound	2 1/4 cups
Wheat flour	1 pound 4 ounces	1 1/4 quarts
Soy flour	12 ounces	.....
Baking powder	1 1/2 ounces	3 tablespoons
Cinnamon	1/2 ounce	2 tablespoons
Salt	.....	2 teaspoons
Water	.....	1 1/2 cups

Mix sugar and fat until well blended. Combine the dry ingredients; stir to mix.

Add water and dry ingredients to the sugar mixture; mix well.

Drop dough by spoonfuls, 1 inch apart, onto a greased baking pan.

Press cookies with fork or the bottom of a small container.

Bake in a moderate oven about 15 minutes or until golden brown.

About 3.7 grams protein and 212 calories per serving (2 cookies).

Lemon Cookies (Soy flour)

Yield: 50 servings, 2 cookies each, 2 1/2-inch diameter

Ingredient	Weight	Volume
Sugar	1 pound 12 ounces	1 quart
Cooking fat	4 ounces	1/2 cup
Wheat flour	1 pound	1 quart
Soy flour	1 pound	.....
Salt	.....	1 teaspoon
Baking powder	1 1/2 ounces	3 tablespoons
Lemon rind	.....	1 tablespoon
Lemon juice	3 ounces	1/3 cup
Water	.....	2 cups

Mix sugar and fat until well blended. Combine the dry ingredients; stir to mix.

Add lemon rind, juice, water, and dry ingredients to the sugar mixture; mix well.

Drop dough by spoonfuls, 1 inch apart, onto a greased baking sheet.

Press cookies with fork or the bottom of a small container.

Bake in a moderate oven 15 minutes or until golden brown.

About 4.3 grams protein and 154 calories per serving (2 cookies).

Puff-Puff Doughnut Balls (Soy flour)

Yield: 50 servings, 2 balls each, about 1 3/4-inch diameter

Ingredient	Weight	Volume
Wheat flour	2 pounds 8 ounces	2 1/2 quarts
Soy flour	8 ounces	.....
Sugar	7 ounces	1 cup
Nutmeg	.....	2 teaspoons
Salt	.....	2 teaspoons
Baking powder	1 1/2 ounces	1/4 cup
Eggs, beaten	.....	6
Water	.....	1 quart

Mix flours, sugar, nutmeg, salt, and baking powder. Add eggs and water. Stir only enough to moisten dry ingredients.

Drop by spoonfuls into hot fat and fry until brown on one side, turn to brown other side. Remove from fat. Drain.

If desired, roll puff-puffs in sugar.

About 4.9 grams protein and 127 calories per serving (2 balls).

Rice Jelly (Soy flour)

Yield: 50 servings, about 1/2 cup each

Ingredient	Weight	Volume
Rice flour	1 pound	2 3/4 cups
Cold water	.....	2 1/2 cups
Boiling water	.....	1 1/4 gallons
Salt	.....	2 1/2 teaspoons
Sugar	5 ounces	3/4 cup
Soy flour	1 pound 4 ounces	.....
*Grated orange rind	.....	2 1/2 teaspoons
*Orange juice	.....	2 1/2 cups

Mix rice flour with the cold water to make a thin paste. Stir into the boiling water.

Add salt and sugar and boil until the mixture is transparent, about 10 minutes.

Remove from heat, stir in soy flour, orange rind, and orange juice.

About 4.9 grams protein and 98 calories per serving.

* Lemon or other desired flavoring may be used.

Soy Cookies (100% soy flour)

Yield: 50 servings, 2 cookies each, 3-inch diameter

Ingredient	Weight	Volume
Sugar	1 pound 10 ounces	3 3/4 cups
Cooking fat	14 ounces	1 3/4 cups
Vanilla	.....	1 tablespoon
Salt	.....	1 3/4 teaspoons
Soy flour	1 pound 12 ounces	.....
Baking powder	.....	2 tablespoons
Water	.....	About 1 3/4 cups

Mix sugar, fat, vanilla, and salt until well blended. Combine soy flour and baking powder; stir to mix. Add water and dry ingredients to sugar mixture; mix well (mixture will be stiff).

Roll dough into balls and place 1 inch apart on greased baking sheet.

Press cookies with fork or bottom of a small container. Bake in a moderately hot oven 14 minutes or until a golden brown.

About 5.9 grams protein and 181 calories per serving (2 cookies).

APPENDIX

Tables

Table 1.—Proximate composition of cottonseed, peanut, and soy flours¹

Description of flour	Moisture	Lipids	Nitrogen	Ash	Crude fiber
	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>
Cottonseed flour, low-fat:					
Glanded	3.4	0.6	10.9	8.5	1.3
Glandless	5.4	.6	9.9	7.5	2.6
Peanut flour, low-fat	4.0	.2	11.3	5.4	1.3
Soy flour, full-fat:					
Extrusion process	4.7	22.1	6.5	5.2	2.0
Village process	3.8	23.0	6.8	4.8	2.0

¹ Data on cottonseed and peanut flour supplied by Southern Utilization Research and Development Division, on soy flour by Northern Utilization Research and Development Division.

Table 2.—Ratings of food products prepared with peanut flour at the Research Center

Food product	Peanut flour in cooked food	Palatability scores ¹				
		Appearance	Aroma	Texture	Flavor	Acceptability
	<i>Percent</i>					
Beverages and soups:						
Peanut beverage	6	3.6	—	3.6	3.7	3.8
Bean soup	2	4.5	4.8	5.0	4.8	4.8
Carrot soup	6	4.4	4.6	4.7	4.1	4.1
Lentil soup	2	4.6	4.9	4.8	4.4	4.5
Sweetpotato puree	10	4.0	4.8	4.0	3.8	3.9
Vegetable soup	2	4.0	4.4	4.0	4.0	4.1
Main dishes:						
Bean cakes	5	4.9	—	3.4	4.0	3.6
Bean curry	4	5.0	5.0	5.0	4.8	4.8
Beans and rice	1	4.6	4.8	4.8	4.3	4.4
Bean stew	3	4.5	5.0	4.5	4.0	4.5
Creole eggplant	6	4.6	4.6	4.5	4.4	4.5
Breads:						
Biscuits	4	5.0	4.6	4.5	4.6	4.0
Chapati	10	4.1	4.2	4.1	3.8	3.8
Cornbread without egg . .	8	4.6	4.6	4.6	4.8	4.8
Cornbread with egg	8	4.5	4.1	4.5	4.0	4.1
Yeast bread	11	4.3	4.8	3.9	4.8	4.2
Cereal products:						
Cornmeal porridge	4	3.9	4.1	3.5	2.6	2.9
Cooked rice, seasoned . . .	4	3.8	3.9	4.0	3.5	3.6
Noodles without egg	5	4.5	4.8	4.2	4.0	4.2
Noodles with egg	3	4.4	4.9	3.5	4.1	4.1
Rice-spinach	3	4.5	4.4	4.4	4.2	4.4
Desserts:						
Cinnamon sugar cookies . .	16	4.3	4.4	4.0	4.2	4.1
Lemon cookies	15	4.0	—	3.4	3.8	3.8
Peanut cookies	12	5.0	4.7	4.0	4.7	4.3
Puff-puff doughnut balls . .	16	4.3	—	2.7	3.7	3.7
Rice jelly	9	4.0	4.4	3.6	2.8	3.2

¹ 5-point scale: 5, very good; 1, very poor.

Table 3.—Ratings of food products prepared with soy flour at the Research Center

Food product	Soy flour in cooked food	Palatability scores ¹				
		Appearance	Aroma	Texture	Flavor	Acceptability
	<i>Percent</i>					
Beverages and soups:						
Soy beverage	5	3.7	4.6	4.1	3.0	3.1
Beverage, uncooked	10	4.0	4.3	3.7	3.7	4.0
Bean soup	1	4.7	4.8	4.7	4.3	4.4
Carrot soup	5	4.5	4.6	3.9	4.0	4.2
Lentil soup	3	4.4	4.9	4.2	4.2	4.2
Sweetpotato puree	11	4.0	4.0	4.0	4.0	4.0
Vegetable soup	3	4.4	4.8	4.2	4.2	4.2
Main dishes:						
Bean cake	5	4.9	—	4.5	4.6	4.6
Bean curry	5	5.0	5.0	4.5	4.2	4.2
Beans and rice	1	4.7	4.9	4.5	4.4	4.5
Bean stew	4	4.2	4.8	4.2	4.0	4.1
Creole eggplant	5	4.4	4.8	4.4	4.5	4.4
Spinach in sauce	14	4.0	4.8	4.4	4.4	4.3
Breads:						
Biscuits	3	4.5	4.0	4.5	5.0	4.5
Chapati	26	4.7	4.8	4.4	3.8	3.9
Cornbread without egg . .	8	4.5	4.8	4.1	4.0	4.1
Cornbread with egg . . .	8	5.0	5.0	4.1	4.4	4.4
Tortillas	5	4.8	4.8	4.0	3.7	3.8
Yeast bread	5	4.8	4.6	4.6	4.3	4.4
Yeast bread	12	4.5	4.8	4.2	4.2	4.2
Cereal products:						
Cornmeal porridge	4	3.9	4.4	3.8	2.8	3.1
Cornmeal squares.	4	4.0	4.0	4.5	5.0	4.5
Cooked rice, seasoned . .	3	4.0	4.8	4.4	4.8	4.6
Noodles with egg	2	3.7	4.3	4.3	4.2	4.2
Rice-spinach	3	4.7	4.5	4.4	4.4	4.4
Desserts:						
Cinnamon cookies	18	4.8	5.0	4.0	4.0	4.2
Lemon cookies	15	4.9	4.6	4.0	4.0	4.0
Sugar cookies	40	4.8	5.0	4.0	4.0	4.2
Puff-puff doughnut balls .	9	4.9	5.0	4.1	4.5	4.4
Rice jelly	8	4.1	4.9	4.6	4.5	4.5
Soy cookies	37	4.4	4.6	4.1	4.3	4.2

¹ 5-point scale: 5, very good; 1, very poor.

Table 4.—Ratings of food products prepared with cottonseed flour at the Research Center

Food product	Cottonseed flour in cooked food	Palatability scores ¹				
		Appearance	Aroma	Texture	Flavor	Acceptability
<i>Percent</i>						
Glanded cottonseed:						
Biscuits	4	3.5	2.2	3.2	2.2	2.3
Bean soup	1	3.4	3.7	4.2	3.6	3.6
Cornmeal porridge	4	2.0	1.5	3.2	1.0	1.1
Noodles	7	2.3	2.3	3.9	2.2	2.3
Yeast rolls	8	3.2	2.4	3.1	2.4	2.5
Glandless cottonseed:						
Biscuits	6	4.6	4.2	4.0	3.8	3.8
Bread	11	3.8	5.0	3.7	4.5	4.4
Bean soup.	1	3.7	4.4	4.3	4.4	4.2
Cornmeal porridge	5	4.1	3.8	3.8	3.2	3.3
Noodles	11	4.1	4.7	4.5	4.6	4.5
Yeast rolls	10	4.4	4.2	3.9	3.8	3.8

¹ 5 - point scale: 5, very good; 1, very poor.

Table 5.—Ratings of food products prepared with peanut and soy flour at Howard University

Food product	Plant flour in cooked product	Palatability scores ¹			
		Appearance	Texture	Flavor	Acceptability
	<i>Percent</i>				
Peanut flour (panel):					
Beverage	6	3.0	2.5	2.7	2.7
Bean soup	2	4.2	3.8	3.8	3.8
Sweetpotato puree	10	4.7	4.0	4.5	4.2
Vegetable soup	3	3.9	4.0	3.8	3.7
Bean cake	5	4.3	4.5	4.0	4.5
Bean curry	4	2.2	2.4	2.9	2.4
Beans and rice	1	4.2	4.7	4.7	4.7
Bean stew.	3	4.1	3.9	3.8	3.8
Biscuits (low-fat)	4	4.1	3.3	3.3	3.2
Cornbread with egg	8	4.5	4.1	4.1	4.1
Tortillas	5	4.3	4.2	4.3	4.3
Cornmeal porridge	4	4.7	3.5	3.3	3.0
Noodles without egg	5	4.1	4.1	4.1	4.1
Rice-spinach	3	4.1	4.1	4.8	4.5
Puris	6	4.8	4.8	4.8	4.7
Lemon cookies	15	4.2	4.2	4.2	4.1
Peanut cookies	12	4.5	4.5	4.2	4.7
Puff-puff doughnut balls .	16	4.2	4.3	4.2	4.2
Peanut flour (luncheon):					
Beverage	6	3.0	2.5	2.7	2.7
Vegetable soup	2	3.9	4.0	3.8	3.7
Bean stew	3	4.1	3.9	3.8	3.8
Puris	10	4.8	4.8	4.8	4.7
Lemon cookies	15	4.2	4.2	4.2	4.1
Soy flour (panel):					
Bean soup	1	4.2	4.0	3.2	3.3
Sweetpotato puree	11	4.5	3.5	2.7	2.7
Bean cake	5	3.8	4.2	4.3	4.3
Beans and rice	1	4.0	4.5	4.5	4.2
Bean curry	5	2.2	2.4	2.8	2.7
Biscuits (low-fat)	3	4.0	3.7	3.5	3.5
Cornbread with egg	8	4.2	4.2	3.8	3.8
Tortillas	5	3.8	4.2	3.7	3.3
Cornmeal porridge. . . .	4	4.5	3.3	3.3	3.3
Noodles with egg	2	3.7	1.3	3.2	2.2
Rice-spinach	3	3.8	4.0	3.7	3.7
Cinnamon cookies	18	4.7	4.5	4.8	5.0
Puff-puff doughnut balls .	9	4.3	4.3	4.0	4.0

¹ 5 - point scale: 5, very good; 1, very poor.

Table 6.—Calories, protein, and essential amino acids in 100 grams of selected food ingredients used in the food formulas or as reference standards

Ingredient	Food energy	Protein	Tryptophan	Threonine	Isoleucine	Leucine	Lysine	Methionine	Cystine	Phenylalanine	Tyrosine	Valine
	Cal.	Gm.	Mg.	Mg.	Mg.	Mg.	Mg.	Mg.	Mg.	Mg.	Mg.	Mg.
Plant protein flour:												
Cottonseed flour.	356	48.1	591	1764	1884	2945	2139	686	814	2610	1365	2458
Peanut flour	371	47.9	647	1575	2410	3563	2091	516	881	2963	2100	2916
Soy flour	421	36.7	541	1547	2112	3030	2483	528	698	1943	1251	2062
Other ingredients:												
Beans, red (dry)	343	22.5	214	1002	1312	1985	1715	233	229	1275	891	1401
Beans, white (dry)	340	22.3	199	928	1216	1839	1589	216	212	1181	825	1298
Chickpeas.	360	20.5	170	739	1195	1538	1434	276	296	1012	692	1025
Cornmeal.	364	7.9	56	367	425	1192	265	171	119	418	562	470
Eggs, chicken (whole)	163	12.9	211	637	850	1126	819	401	299	739	551	950
Nonfat dry milk (dry)	363	35.9	502	1641	2271	3493	2768	870	318	1724	1814	2444
Peanuts	582	26.2	340	828	1266	1872	1099	271	463	1557	1104	1532
Rice (white, converted).	363	6.7	82	298	356	655	300	137	103	382	347	531
Sweetpotatoes	114	1.7	31	85	87	103	85	33	29	100	81	135
Tapioca flour.	352	.6	21	44	45	66	66	10	18	45	30	49
Wheat flour (white)	364	10.5	129	302	483	809	239	138	210	577	359	453
Whole wheat flour	333	13.3	116	271	408	630	258	143	206	464	351	435
Yeast (active dry)	282	36.9	636	2353	2708	3300	3337	851	444	1813	2472	2553
Yeast (compressed)	86	12.1	122	655	655	1151	914	248	120	607	580	840
Reference standards:												
Milk, cow.	65	3.5	49	161	223	344	272	86	31	170	178	240
Milk, human	77	1.1	23	62	75	124	90	28	27	60	71	86

Sources: Orr, M. L., and Watt, B. K. Amino acid content of foods. U.S. Dept. Agr. Home Econ. Res. Rpt. 4, 82 pp. 1957; and Watt, B. K., and Merrill, A. L. Composition of foods—raw, processed, prepared. U.S. Dept. Agr., Agr. Handb. 8, 190 pp. 1963.

Table 7.—Calculated values for calories, protein, and essential amino acids in 100 grams ready-to-eat food made with cottonseed flour

Food	Recipe size ¹	Food energy	Protein	Tryptophan	Threonine	Isoleucine	Leucine	Lysine	Methionine	Cystine	Phenylalanine	Tyrosine	Valine
Soup:													
Bean soup.	F	81	3.5	33	138	171	259	222	36	35	176	116	187
Breads:													
Batter bread	F	263	8.6	108	297	387	612	315	123	156	465	201	415
Biscuits	F	358	7.2	88	226	313	513	218	97	136	393	231	330
Yeast bread, 11% cottonseed flour	F	297	12.6	158	434	547	871	468	178	228	688	408	612
Cereals:													
Cornmeal													
porridge	F	62	3.4	34	128	141	287	132	53	53	173	134	173
Noodles	F	208	10.7	138	378	491	766	411	174	204	588	352	547

¹ F, family-size recipe.

Sources: Orr, M. L., and Watt, B. K. Amino acid content of foods. U.S. Dept. Agr. Home Econ. Res. Rpt. 4, 82 pp. 1957; and Watt, B. K., and Merrill, A. L. Composition of foods—raw, processed, prepared. U.S. Dept. Agr., Agr. Handb. 8, 190 pp. 1963.

Table 8.—Calculated values for calories, protein, and essential amino acids in 100 grams ready-to-eat food made with peanut flour

Food	Recipe size ¹	Food energy	Protein	Tryptophan	Threonine	Isoleucine	Leucine	Lysine	Methionine	Cystine	Phenylalanine	Tyrosine	Valine
		Cal.	Gm.	Mg.	Mg.	Mg.	Mg.	Mg.	Mg.	Mg.	Mg.	Mg.	Mg.
Beverages and soups:													
Bean soup.	Q	89	4.5	41	167	219	330	276	41	43	220	153	238
Beverage	F	50	4.6	62	151	231	341	200	49	84	283	201	279
Lentil soup	F	54	4.2	47	153	224	329	270	48	60	217	168	234
Sweetpotato puree.	Q	84	4.9	70	173	248	356	219	59	89	118	218	312
Vegetable soup	F	49	3.0	80	289	436	569	487	102	115	423	274	419
Main dishes:													
Bean cake.	Q	100	6.6	93	365	494	742	595	92	108	509	357	543
Bean curry	F	126	8.6	86	298	474	637	526	108	133	455	317	455
Beans and rice	Q	120	5.3	47	200	262	403	326	52	52	264	190	292
Bean stew.	F	100	6.7	88	230	358	482	401	82	98	364	237	344
Rice-spinach	F	241	4.0	51	144	183	301	179	57	65	202	159	238
Breads:													
Biscuits (high-fat)	Q	421	10.2	128	335	491	750	445	163	167	494	411	542
Chapati	Q	319	15.5	201	480	730	1100	562	198	310	870	633	840
Cornbread	Q	254	9.5	110	333	464	819	369	145	169	514	435	535
Cornbread without egg.	Q	316	8.8	97	294	413	762	317	117	150	474	409	479
Tortillas	Q	198	5.0	50	200	259	575	190	82	83	284	291	299
Yeast bread:													
10% peanut flour	Q	256	10.2	153	375	560	831	444	155	228	647	485	635
4% peanut flour	Q	282	8.5	109	269	413	655	269	111	163	480	326	418
Cereal products:													
Commeal porridge.	Q	53	3.0	34	107	149	280	119	40	51	173	150	176
Cornmeal squares	Q	63	3.5	39	123	171	325	135	47	58	197	174	202
Cooked rice	Q	67	3.7	47	124	180	281	155	46	63	215	161	229
Noodles	Q	144	7.8	105	262	396	599	301	114	153	454	311	435
Desserts:													
Peanut cookies	Q	480	11.8	150	363	554	825	457	133	216	671	481	655
Puff-puff doughnut balls	F	198	11.0	149	375	564	844	450	157	214	652	452	637
Rice jelly	Q	72	4.9	64	161	240	363	209	56	86	291	211	297

¹ F, family-size recipe; Q, quantity-size recipe.

Sources: Orr, M. L., and Watt, B. K. Amino acid content of foods. U.S. Dept. Agr. Home Econ. Res. Rpt. 4, 82 pp. 1957; and Watt, B. K., and Merrill, A. L. Composition of foods—raw, processed, prepared. U.S. Dept. Agr., Agr. Handb. 8, 190 pp. 1963.

Table 9.—Calculated values for calories, protein, and essential amino acids in 100 grams ready-to-eat food made with soy flour

Food	Recipe size ¹	Food energy	Protein	Tryptophan	Threonine	Isoleucine	Leucine	Lysine	Methionine	Cystine	Phenylalanine	Tyrosine	Valine
		Cal.	Gm.	Mg.	Mg.	Mg.	Mg.	Mg.	Mg.	Mg.	Mg.	Mg.	Mg.
Beverages and soups:													
Bean soup.	Q	71	3.3	30	124	160	240	208	31	31	154	106	168
Beverage	Q	48	3.6	44	129	172	247	202	43	57	158	106	168
Sweetpotato puree.	Q	92	4.1	63	177	230	321	263	62	76	220	148	245
Vegetable soup.	F	57	2.8	84	321	471	606	563	114	119	418	260	422
Main dishes:													
Bean cakes	Q	121	7.6	68	260	341	506	434	69	75	328	222	353
Bean curry	F	128	8.0	80	296	457	606	548	108	123	397	269	406
Beans and rice	Q	102	4.4	39	168	219	336	278	44	43	215	153	240
Bean stew.	Q	102	6.3	62	230	347	462	419	82	90	303	203	310
Creole eggplant	Q	76	3.1	36	106	135	193	163	34	38	126	78	132
Rice-spinach	Q	122	2.4	43	216	159	260	177	52	54	156	120	192
Breads:													
Biscuits (high-fat)	Q	365	8.4	106	288	412	627	397	141	137	389	324	436
Chapati	Q	340	14.0	188	492	701	638	652	207	287	714	500	713
Cornbread	Q	227	8.0	95	314	415	732	387	140	144	397	338	433
Cornbread without eggs.	Q	262	7.7	86	291	383	709	356	119	132	372	324	394
Tortilla	Q	197	4.4	44	195	240	539	205	81	73	230	245	253
Yeast bread													
11% soy flour	Q	293	10.0	136	364	524	802	459	142	192	539	357	545
4% soy flour	Q	310	8.7	114	291	434	686	313	121	168	427	312	411
Cereal products:													
Communal porridge.	Q	51	2.3	27	97	125	235	124	37	39	117	104	127
Cornmeal squares	Q	64	2.9	33	120	154	294	152	47	49	145	130	158
Cooked rice	Q	66	2.8	39	118	156	240	169	45	50	149	108	173
Noodles	Q	166	7.7	108	292	418	636	371	129	156	421	275	415
Seasoned rice.	Q	98	2.2	30	92	119	190	126	36	37	118	90	141
Desserts:													
Puff-puff doughnut balls	F	230	9.8	136	366	224	791	504	137	190	527	335	505
Rice jelly	Q	69	3.5	52	151	200	292	231	54	71	190	124	203
Soy cookies													
100% soy flour.	Q	359	11.6	170	487	664	953	781	166	220	611	394	649

¹ F, family-size recipe; Q, quantity-size recipe.

Sources: Orr, M. L., and Watt, B. K. Amino acid content of foods. U.S. Dept. Agr. Home Econ. Res. Rpt. 4, 82 pp. 1957; and Watt, B. K., and Merrill, A. L. Composition of foods—raw, processed, prepared. U.S. Dept. Agr., Agr. Handb. 8, 190 pp. 1963.

Table 10.—Volume-weight equivalents of cottonseed flour and ready-to-eat food products made with cottonseed flour

Food product	Volume	Weight (grams)
Cottonseed flour.	1 cup	80
Bean soup.	1 cup	257
Batter bread	1 slice, 1/2-inch thick	54
Biscuits	1 biscuit, 2-inch diameter	48
Yeast bread, 11% cottonseed flour . .	1 slice, 4 3/8 x 2 1/4 x 1/2 inches	56
Cornmeal porridge	1 cup	249
Noodles	1 cup	136

Table 11.—Volume-weight equivalents of peanut flour and ready-to-eat food products made with peanut flour

Food product	Volume	Weight (grams)
Peanut flour	1 cup	69
Beverages and soups:		
Beverage	1 cup	240
Bean soup.	1 cup	239
Carrot soup	1 cup	238
Lentil soup	1 cup	247
Vegetable soup	1 cup	248
Main dishes:		
Bean cake.	1 cake, 2 1/2-inch diameter	95
Bean curry	1 cup	256
Beans and rice	1 cup	226
Bean stew.	1 cup	274
Creole eggplant	1 cup	241
Rice-spinach	1 cup	236
Breads:		
Biscuits	1 biscuit, 2-inch diameter	53
Chapati	1 piece, 5-inch diameter	56
Cornbread without egg	1 piece, 2 3/4 x 3 3/4 inches	91
Cornbread with egg	1 piece, 2 3/4 x 3 3/4-inches	60
Tortillas	1 piece, 5-inch diameter	70
Yeast bread		
11% peanut flour	1 slice, 4 3/8 x 2 1/4 x 1/2 inches	45
4% peanut flour	1 slice, 4 3/4 x 2 7/8 x 3/4 inches	49
Cereal products:		
Cornmeal porridge	1 cup	240
Cornmeal squares	1 square, 2 x 2 inches	116
Cooked rice	1 cup	246
Noodles	1 cup	152
Seasoned rice.	1 cup	248
Desserts:		
Cookies		
Cinnamon sugar	1 cooky, 2 1/2-inch diameter	16
Lemon	1 cooky, 2 1/2-inch diameter	18
Peanut	1 cooky, 2 1/2-inch diameter	18
Puff-puff doughnut balls . . .	1 puff	26

Table 12.—Volume-weight equivalents of soy flour and ready-to-eat food products made with soy flour

Food product	Volume	Weight (grams)
Soy flour	1 cup	86
Beverages and soups:		
Beverage	1 cup	232
Bean soup	1 cup	226
Sweetpotato puree	1 cup	231
Vegetable soup	1 cup	227
Main dishes:		
Bean cake	1 cake, 2 1/2-inch diameter	91
Bean curry	1 cup	255
Beans and rice	1 cup	268
Bean stew	1 cup	273
Creole eggplant	1 cup	246
Rice-spinach	1 cup	238
Spinach in sauce	1 cup	203
Breads:		
Biscuits	1 biscuit, 2-inch diameter	54
Chapati	1 piece, 5-inch diameter	64
Cornbread without egg	1 piece, 2 3/4 x 3 3/4 inches	91
Cornbread with egg	1 piece, 2 3/4 x 3 3/4 inches	60
Tortillas	1 piece, 5-inch diameter	72
Yeast bread		
11% soy flour	1 slice, 3 3/4 x 2 x 5/8 inches	45
4% soy flour	1 slice, 4 5/8 x 2 7/8 x 3/4 inches	31
Cereal products:		
Cornmeal porridge	1 cup	254
Cornmeal squares	1 square, 2 x 2 inches	118
Cooked rice	1 cup	110
Noodles	1 cup	132
Seasoned rice	1 cup	275
Desserts:		
Cookies		
Cinnamon sugar	1 cooky, 2 1/2-inch diameter	23
Lemon	1 cooky, 2 1/2-inch diameter	20
Soy	1 cooky, 2 1/2-inch diameter	17
Puff-puff doughnut balls	1 puff	25
Rice jelly	1 cup	258

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